ENGINEERING NEWS-RECORD

OCT. 13, 1960

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Fitting Cities to the Future:

Philadelphia rebuilds to a 21st Century Plan *p.41*

A McGRAW-HILL PUBLICATION

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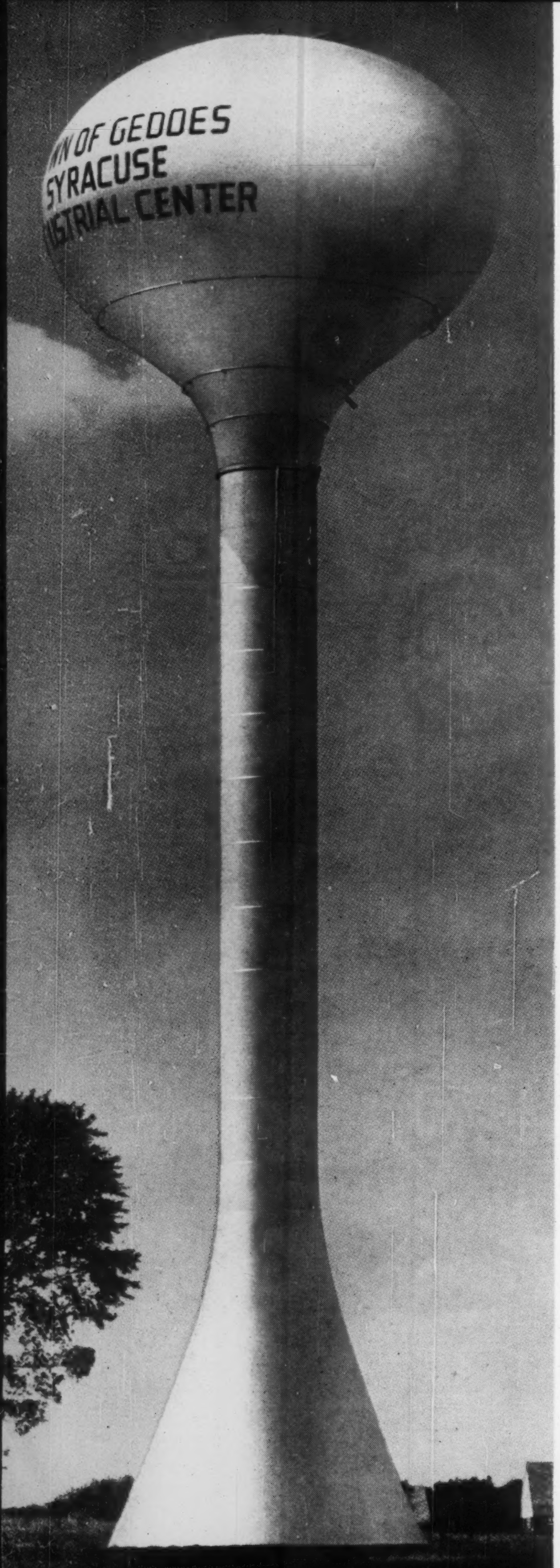

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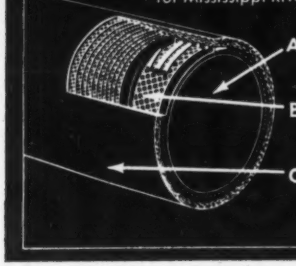
Dredging up 57,481,000 yards of river bottom in 8 seasons— with the hose still in good shape—was the best service these Mississippi River dredge operators had ever gotten. And they got it from special 38-inch Sand Suction Hose recommended by the G.T.M.—Goodyear Technical Man. This long, trouble-free operation was a real time- and money-saver, too. For every replacement of the hose-link between the dredge ladder and the suction line takes a full crew's efforts for 3 days. More important, the dredge is out of action all that time. So it's easy to see why this dredge operator has stayed with the G.T.M.'s longer-lasting hose.

GOODYEAR INDUSTRIAL PRODUCTS GTM-**Specified**

Special 38" Sand Suction Hose
for Mississippi River dredging



A Tube of super-tough stock to withstand razor-sharp wet sand

B Reinforcements of heavy wrapped fabric plies plus high-strength spiraled wire

C Heavy gauge cover resistant to gouging and scuffing.

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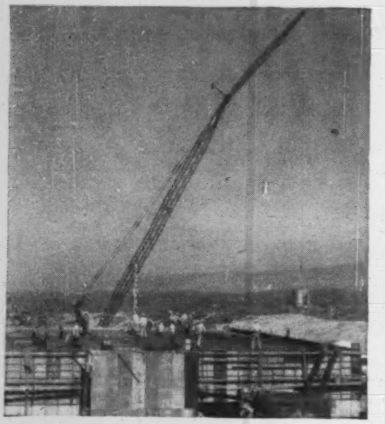


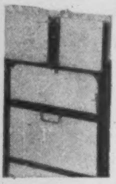
Speed in Forming Symons Steel-Ply Forms

. . . Keys Rocket Progress at Vandenberg Air Force Base

By discarding traditional forming methods in favor of prefabbed, lightweight, Symons Steel-Ply Forms, a heads-up piece of construction planning has reduced time and cost estimates for a 25,000-yard concrete job at Vandenberg Air Force Base, California. The average small 10-man carpenter gang erected up to *5625 square feet in a day.*

96 percent of the 80,000 square feet of total forming area was completed with Symons Steel-Ply Forms, fillers, corner pieces and necessary hardware. About 20,000 square feet of forms, reused, formed the total surface. The forms were used successfully for haunch building, forming suspended floor slabs and beams, all types of walls, heavy mass concrete, and they were even used on one side of the flame-bucket pour.

Advance detailing and shipment of forms from stock saved at least a month's valuable carpenter-gang time in getting the job under way. Complete Vandenberg story will be sent upon request. Symons Steel-Ply Forms can be rented with purchase option.



NEW Extension Angle

12" long with detail on each end for connection to Symons Steel-Ply Panels and Fillers. Designed for ¾" plywood facing.

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This is the kind of a job that brings out the value of the Northwest Feather-Touch Clutch Control. The Feather-Touch Clutch Control brings greater ease to operation. It gives the true "feel" of the load. There is no substitute for the feel of the load in probing out a buried ledge of rock, "feeling" for utilities or working around men.

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These are just a part of the many Northwest advantages that get the job done—just a few of the things that save time and make money. There is nothing finer in a Pullshovel.

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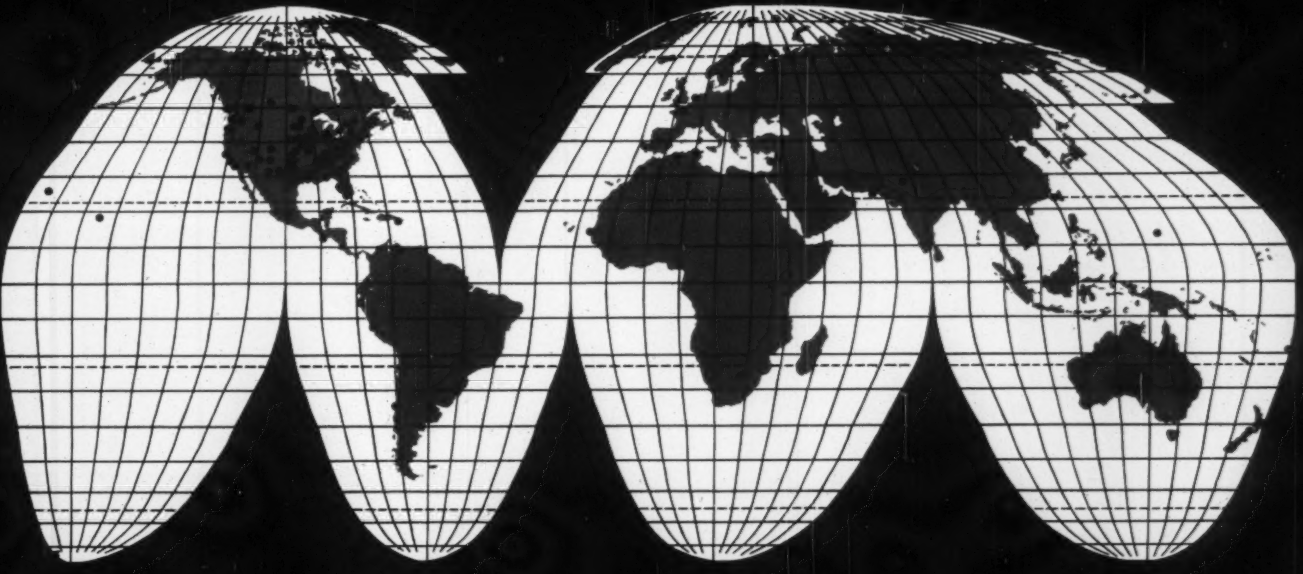

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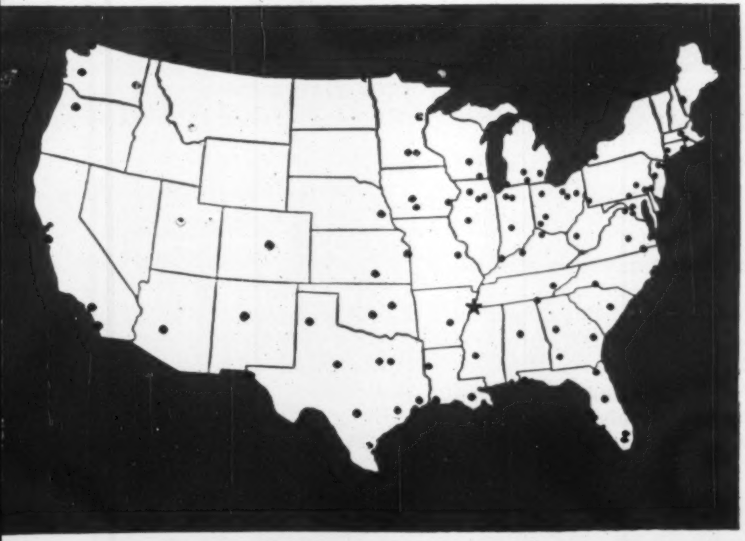

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Coated Fab-Form's red oxide coating shields the base steel from corrosive elements in concrete. Here, on the roof of Looman Associates Office Building in Trenton, N. J., coated Fab-Form was installed by a four-man crew in just one day. Architect, Kramer, Hirsch & Carchidi; Structural Engineer, Leonard Busch; Contractor, Belli Co.; all of Trenton. On this job, Fab-Form was distributed by American Steel Engineering Co., Philadelphia.

HOW TO SEE RED—AND LIKE IT

Pittsburgh Steel's New Coated Fab-Form Has "Better Corrosion Resistance," Says Philadelphia Contractor; "Goes Down Faster Than Other Steel Forms"

When a builder gets blood in his eye, you can bet he's scowling at a cost sheet.

But many a contractor, architect and builder is seeing red these days —and liking it.

They're the alert people who have used Pittsburgh Steel Company's coated Fab-Form, a new corrugated, permanent steel form for concrete floor and roof slabs.

They were quick to see these Fab-Form benefits:

- **Bonderized,** baked-on, red-oxide coating—shrugs off bad weather and shields the base steel from corrosive elements in concrete.
- **Extra length**—standard sizes or custom cut up to 28 feet, 3 inches.
- **Extra width**—32-inch cover width, the widest available.
- **Deeper corrugation**—full $\frac{5}{8}$ inch in high-tensile (90,000-100,000 psi), 27-gage cold-rolled steel.

• Case in Point—G&H Steel Service of Drexel Hill, Pa., has laid 200,000 square feet of Fab-Form on two jobs designed for poured floors and roofs over steel joists.

G&H installed about 100,000 square feet of coated Fab-Form in the seven-story Looman Associates Office Building at Trenton, N. J.

Selected over other types of corrosion-resistant, permanent steel forms, coated Fab-Form lengths were engineered to the structural layout. Special 27-foot, 3-inch lengths saved the contractor—Belli Company of Trenton—material, time and installation costs.

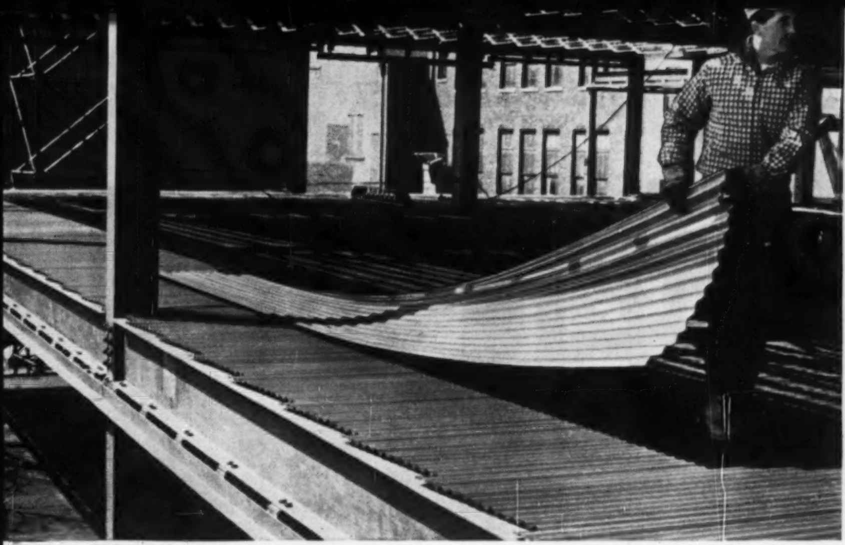
Joseph H. De Vido, Belli job superintendent, said:

"Fab-Form's extra-long length and wider width certainly helped to get these floors and roof poured faster. Its protective coating definitely makes a cleaner job. I'm convinced the red oxide finish has better corrosion resistance than other coated sheet material.

"Weather and rough handling don't seem to have any effect on the coating."

• Easier, Faster—G&H Foreman Bob Tindall agrees that longer, wider Fab-Form—with fewer end and side laps—"goes down faster" than other steel forms.

Using self-tapping screws to fasten Fab-Form to bar joists, Tindall and



Extra-long lengths of coated Fab-Form, 27 feet, 3 inches, were specially commended by job superintendent on Looman Building job. "Fab-Form's extra-long length and wider width certainly helped to get these floors and roof poured faster," he declared. "I'm convinced the red oxide finish has better corrosion resistance than other coated sheet material."

Precision-manufactured, Fab-Form easily fits around obstructions such as columns and pipes. Installation was easier and faster because corrugations line up precisely on end laps.

his three-man crew averaged a day and a half to install each floor on the Looman Building. Installing the obstruction-free roof deck took just a day.

Tindall said installation was easier and faster because Fab-Form's corrugations lined up precisely on end laps. No extra fitting effort was needed.

Fab-Form comes in plain steel, too, for applications where corrosion resistance is not a major factor.

G&H Steel Service first got Fab-Form's benefits when it installed 100,000 square feet of plain Fab-Form for floor and roof of Snellenburgs Department Store's new suburban branch in the Lawrence Park Center near Philadelphia.

- **Time, Material Saved**—Sizes on this engineered Fab-Form layout ranged from standard 12-foot, 3-inch lengths through special lengths up to 19 feet, 9 inches. This gave maximum savings of material with minimum installation time.

As with the Looman Building, Fab-Form was laid over steel joists with self-tapping screws to support a three-inch poured concrete roof and floor. Pittsburgh Steel's welded wire fabric was laid to give the slab reinforcement.

Job Superintendent Smith Harris of G&H Steel Service reported that installation was fast. Work crews had less trouble fitting side laps and matching end laps with Fab-Form than normally is encountered with other types of steel forms. He said:

"We ordered Fab-Form in lengths engineered to the job. Fab-Form's 32-inch cover width means fewer side laps and its longer lengths, fewer end laps. That adds up to less waste material and speedier installation—which means more money in our pocket."

If you, too, have blood in your eye from studying floor and roof deck costs, look to Pittsburgh Steel's new Fab-Form. Its built-in benefits will go to work for you. Write today for Fab-Form literature that shows how. Or, contact the nearest Pittsburgh Steel Products Division district sales office listed below.

Trained sales engineers are available to help you.

Self-tapping screws fasten uncoated Fab-Form sheets at Snellenburgs suburban store near Philadelphia. Architects and Engineers, Thalheimer and Weitz; Contractor, McCullough-Howard & Co., Inc., all of Philadelphia.

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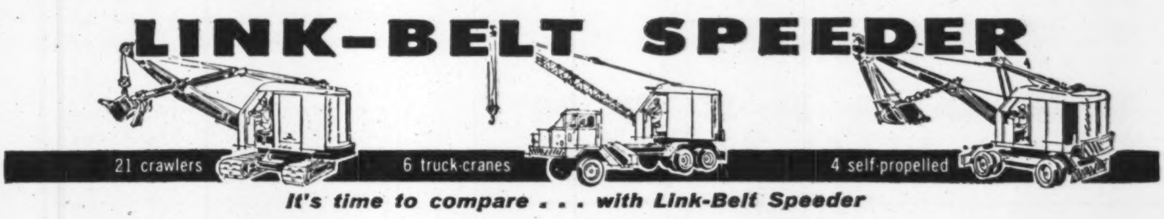

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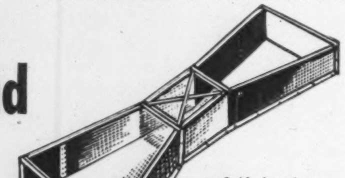

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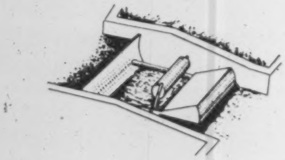

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Reader Comment

No Plug for BPR

Sir—This is in reference to the article "Highway Robbery Bothers BPR" (ENR Sept. 8, p. 76).

I wonder if the Bureau of Public Roads has lost sight of the source of the revenue which goes into the Highway Trust Fund. In case it has, I would like to mention that the taxpayers provide this revenue, and I don't believe the contractor should be eliminated as a taxpayer.

If these taxes, which will swell the state and local government coffers at the expense of BPR, were eliminated, highway department operations would be curtailed.

In essence, plugging the drain would turn off some taps.

Edward J. Hyde
Oklahoma City, Oklahoma

Gammon, Too

Dear Sir—You state (ENR Aug. 4, p. 44) that the Malayan Railway Administration awarded a contract for about $9.5 million to Christiani and Nielsen, Danish engineers and contractors, for harbor development at Port Swettenham.

This information is incorrect, for the contract was awarded to a consortium of equal partnership comprising Gammon (Malaya) 1959 Ltd and Christiani-Nielsen A/S under the title, Gammon & Christiani-Nielsen.

B. Sukias
Singapore, Federation of Malaya

For your calendar . . .

National Safety Council, annual congress, Conrad-Hilton Hotel, Chicago, Ill., Oct. 17-21. Write: Sid Cato, 425 N. Michigan Ave., Chicago 11, Ill.

National Society of Professional Engineers, fall meeting, Denver-Hilton Hotel, Denver, Colo., Oct. 18-21. Write: Paul H. Robbins, 2029 K St., N.W., Washington 6, D. C.

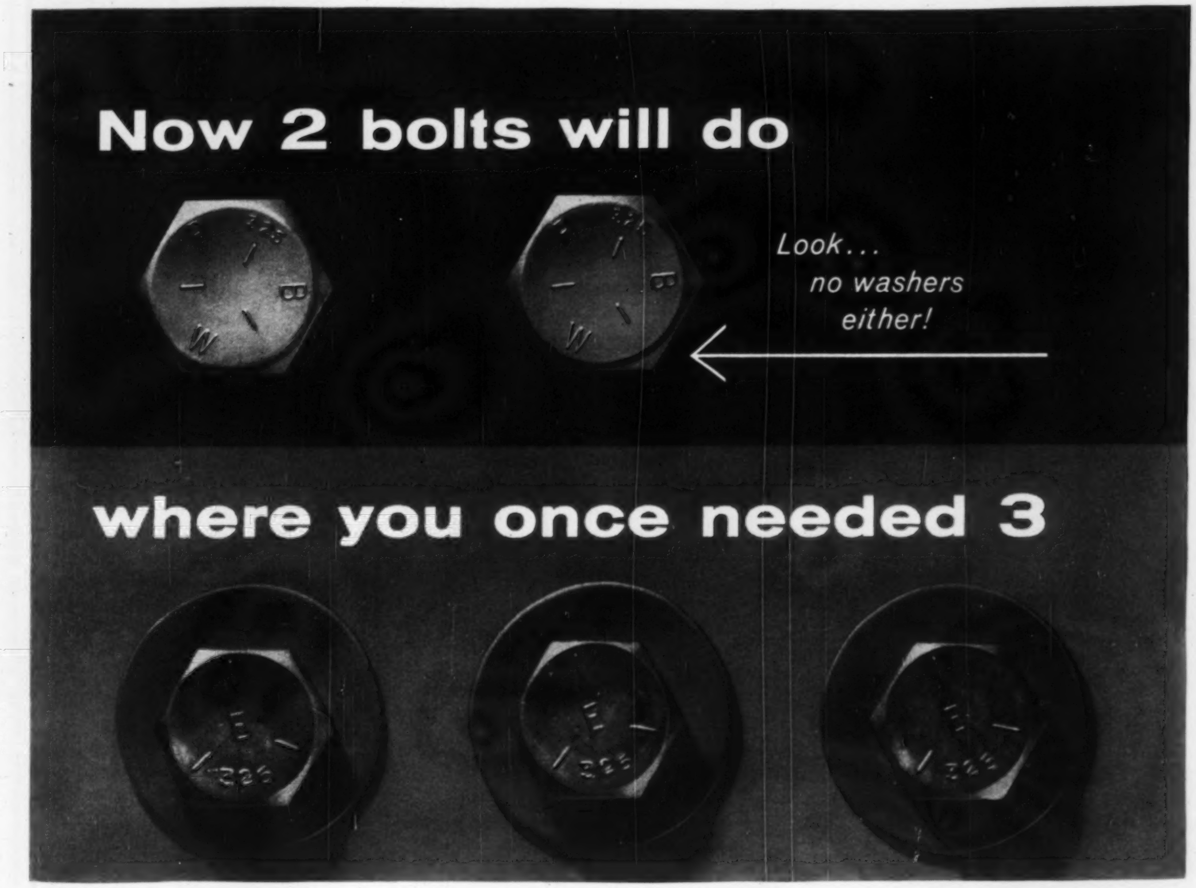
Industrial Hygiene Foundation of America, annual meeting, Mellon Institute, Pittsburgh, Pa., Oct. 26-27. Write: Industrial Hygiene Foundation, 4400 Fifth Ave., Pittsburgh 13, Pa.

Building Research Institute, fall conference, Shoreham Hotel, Washington, D.C., Nov. 15-17. Write: Harold Horowitz, 2101 Constitution Ave., Washington 25, D.C.

Industrial Building Exposition & Congress, New York Coliseum, Dec. 12-15. Write: Clapp & Poliak, 341 [illegible]dison Ave., New York, N. Y.

American Road Builders Association, annual convention, Cincinnati, Jan. 18-20. Write: Norman T. Almquist, World Center Bldg., Washington 6, D.C.

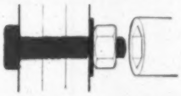
Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.



...when you connect bearing joints with new design RB&W High Strength Bolts

Majority of structural steel joints are bearing-type joints. This is precisely the type that can now be connected *faster, at less cost,* and *with full design strength* by taking advantage of the new large head RB&W High Strength Bolts.

Their shorter thread length assures that the shear plane of the joint will not pass through a threaded section (see sketch). Full shear strength of the bolt is now realized. Two bolts can do the work of three regular bolts . . . or replace three rivets.



In addition, the new larger head enables bolt to be torqued up to full recommended tension without any crushing of the bearing surface. Use one washer only—under the bolt head or nut, whichever is rotated during the wrenching.

This exciting new fastening improvement has been thoroughly tested under the auspices of the Research Council on Riveted and Bolted Structural Joints and is now approved by both the Council and the AISC.

As a leader in pressing for this now recognized improvement, RB&W is producing a full range of bolt sizes, all conforming to ASTM A 325 specification, all with *certified* quality. Start immediately to profit from the engineering, shop fabrication and field erection advantages afforded by RB&W High Strength Bolts. Send for details.

RB&W
116th year

Plants at: Port Chester, N.Y.; Coraopolis, Pa.; Rock Falls, Ill.; Los Angeles, Calif. Additional sales offices at: Ardmore (Phila.), Pa.; Pittsburgh; Detroit; Chicago; Dallas; San Francisco. Sales agents at: Cleveland; Milwaukee; New Orleans; Denver; Fargo.

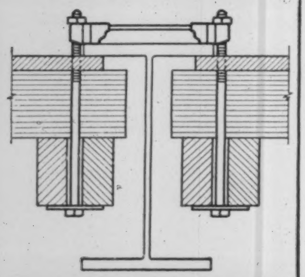
LARGEST INDEPENDENT PRODUCER OF HIGH STRENGTH BOLTS FOR CONSTRUCTION

SUPERIOR HANGERS...

Designed for Fast Erection and Easy Stripping

FOR STEEL BEAMS AND CONCRETE GIRDERS

ADJUSTS FROM TOP OF DECK



NEW

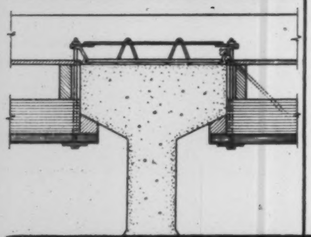
Pres-Steel Hanger

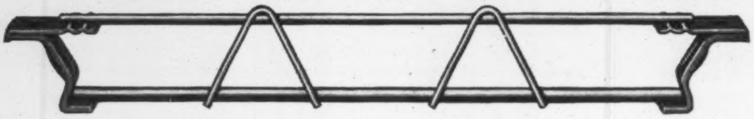
(Pat. pending)

This newly developed Pres-Steel Hanger combines the desirable features of conventional hangers, yet costs less! Assembly is simple, ½" Coil Bolts are passed up through the hanger—no threading is necessary—and a square coil nut is applied. All adjustment is made conveniently from the top of the deck. The foot of the hanger has a saw tooth edge which bites into the flange upon application of a load, preventing any movement of the hanger. The flat top provides even bearing for the nut and the bolt hole is so formed that there is no binding of the bolt on removal. Pres-Steel Hangers are also made to take the bolt or coil rod at 45°.

These economical hangers have a safe working load on steel beams of 8,000 lbs. (ultimate capacity 14,500 lbs.). On concrete girders the safe working load is 6,000 lbs. (ultimate capacity 9,000 lbs.).

ADJUSTS FROM TOP OF DECK



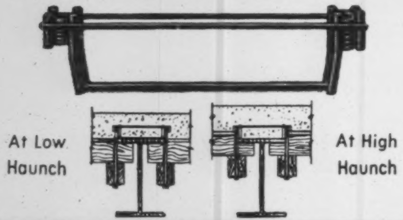


Prescon Hanger

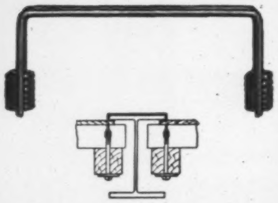
This unique hanger provides hanging points cantilevered away from the concrete girder sides. The forms are hung from coil bolts threaded into heavy square coil nuts bearing on the top plate. Provision is also made for haunch forming above the girder. Adjustment is made conveniently from the TOP of deck. Simultaneous overhanging slab or curb forming is accomplished with coil rod and wing nut at 45°. Available in two types—6M (6,000 lb. safe working load) and 10M (10,000 lb. safe working load). The use of Prescon Hangers on concrete girders eliminates hazardous, makeshift methods.

OTHER SUPERIOR HANGERS FOR HANGING FORMS ON BRIDGE SUPERSTRUCTURES

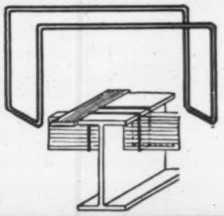
Haunch Coil Hanger Frame



Coil Beam Saddle



Wire Beam Saddle



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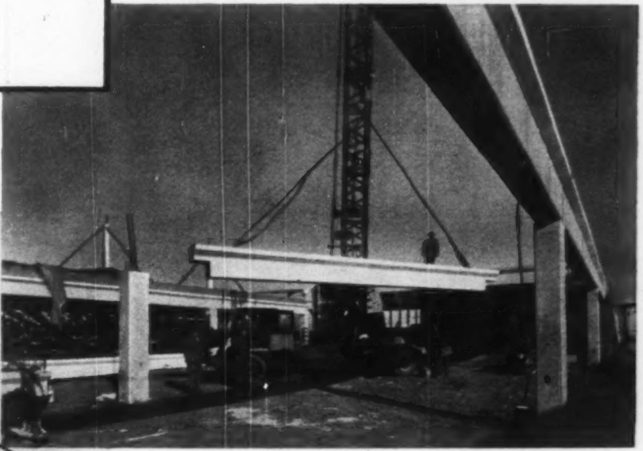
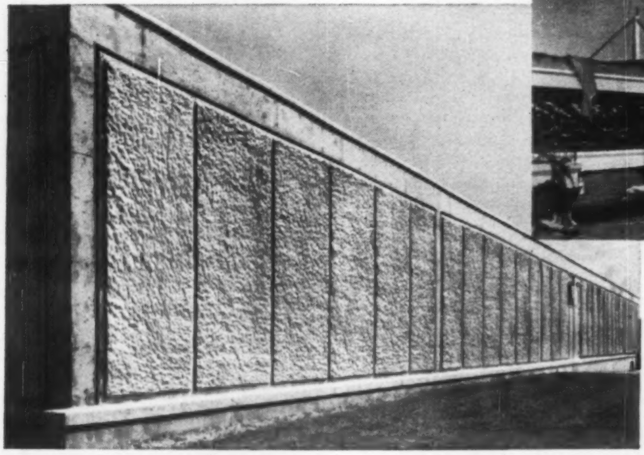
New CATALOG 700

Prestressed members, textured tilt-up walls

FOR NEW ALL-CONCRETE CANDY FACTORY

Owner: Pearson Candy Company, St. Paul, Minn.
Architect: Thorshov & Cerny, Inc., Minneapolis, Minn.
Contractor: C. O. Field Co., Minneapolis, Minn.
Prestressed Units: Prestressed Concrete, Inc., Roseville, Minn.
Ready Mix Concrete For Tilt-up Slabs: Guaranteed Concrete Company, St. Paul, Minn.
Light Weight Concrete Decking: Western Mineral Products Co., Minneapolis, Minn.





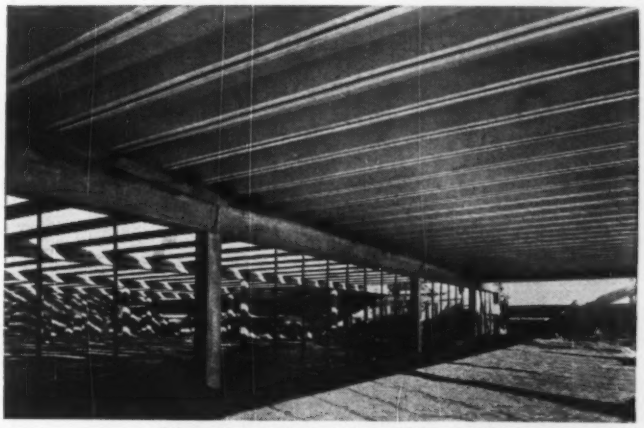
(*Above*) The 160′ x 390′ building is framed on 30′ x 30′ and 39′ x 30′ column centers. Beams are prestressed, columns precast. The floor area at the two story kitchen supports live load of 225 lbs. per sq. ft. without reduction in column spacing.

(*Left*) Most striking outward feature of the new Pearson factory is the tilt-up concrete wall. The interesting texture was achieved by casting the slabs on beds of gravel which had first been covered with plastic film. A total of 47 slabs 12′ high and of lengths from 5′ to 39′ was required.

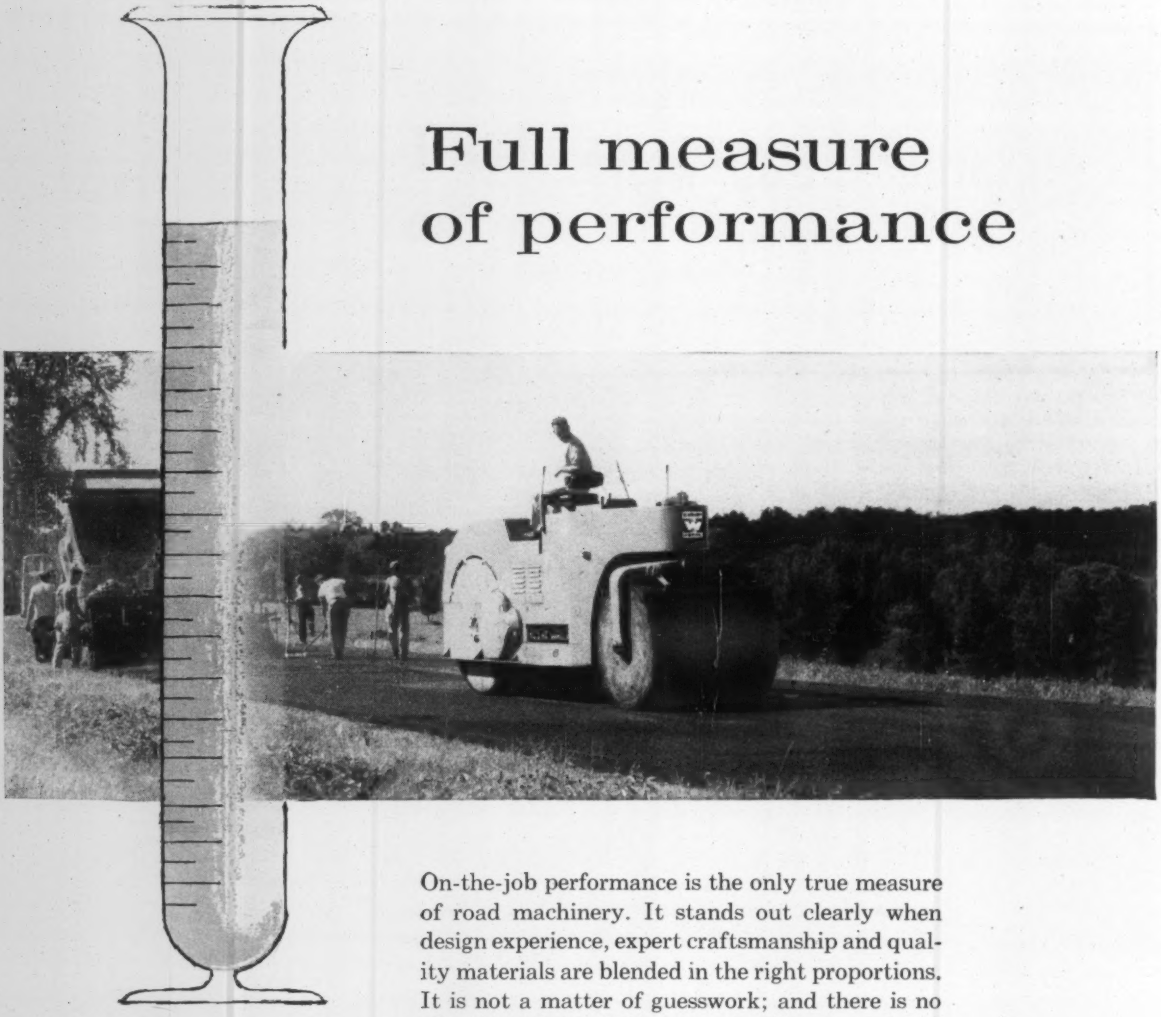
- Prestressed beams, channels, and precast columns provide the structural strength and large open floor areas needed for the Pearson Candy Company operation at St. Paul, Minn. Lightweight concrete roof decking and interesting tilt-up walls provide insulation and architectural effect, and complete the fireproof and low maintenance qualities of the building from roof to foundation.

Lehigh Cements were used throughout. Lehigh Portland for tilt-up walls. Lehigh Early Strength for precast and prestressed members, and for the roof decking. Lehigh Portland Cement Company, Allentown, Pa.

LEHIGH CEMENTS



504 prestressed channel slabs, each spanning 30′, were used in the roof. Over these, lightweight concrete decking was used to insulate and reduce dead load. The simplicity of design seen in this picture indicates the ease with which an efficient building can be erected, using modern concrete construction methods.



Full measure of performance

On-the-job performance is the only true measure of road machinery. It stands out clearly when design experience, expert craftsmanship and quality materials are blended in the right proportions. It is not a matter of guesswork; and there is no substitute for it. When the deadline is near and the going is rough, you need on-the-job performance in full measure. Why not be sure you get it in your next roller, grader, motor or maintainer—go Huber-Warco. Distributors Throughout the Free World.

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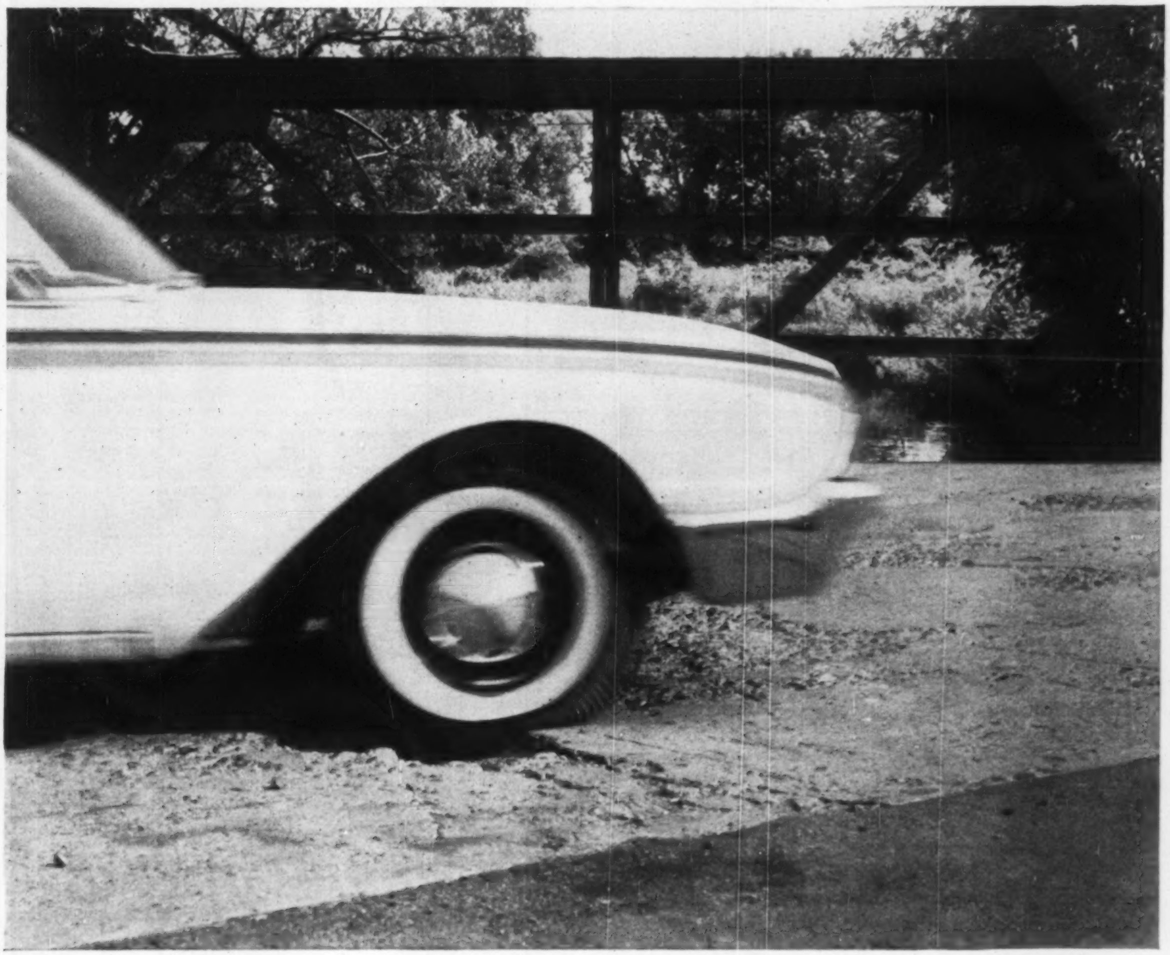

FIGHT TRAFFIC AND FREEZE-THAW DAMAGE

...patch bridge decks with latex modified mortar

From patching dangerous chuckholes to resurfacing an entire bridge deck, you'll get durability far superior to conventional patching materials using portland cement mortar modified with Dow Latex 560!

Latex modified mortar resists water absorption damage . . . provides greater resilience, tensile and bond strengths . . . forms a layer that conforms to the expansion-contraction cycle of the original concrete, reducing stress on the new surface.

In patching chuckholes, latex modified portland cement mortar can be applied directly to the damaged area. The only requirement is that the concrete itself be sound, and the surface free from dust, dirt, grease and loose material.

Where a section of the road surface is badly spalled, only the areas of actual damage need be jack hammered to expose a sound concrete base. A minimum of ½ inch of latex modified mortar is sufficient to give bond and strength. Compare the savings in time, materials, and labor costs against the 4- to 6-inch thicknesses required with conventional resurfacing!

For full information on how you can start testing mortar modified with Dow Latex on structural concrete bridges, or highways, write for a technical report. Address: THE DOW CHEMICAL COMPANY, Midland, Michigan, Plastics Sales Department 1937LQ10-13.

See "The Dow Hour of Great Mysteries" on TV.

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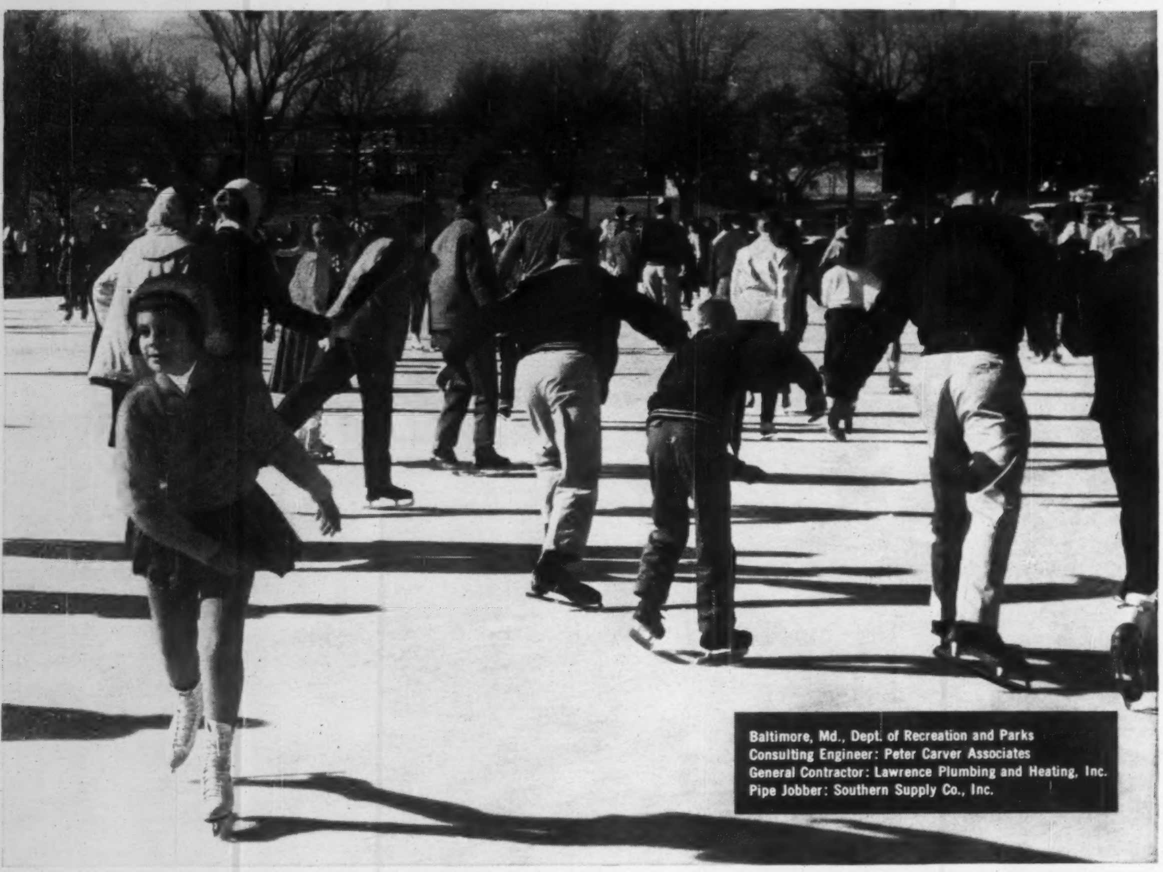


Baltimore, Md., Dept. of Recreation and Parks
Consulting Engineer: Peter Carver Associates
General Contractor: Lawrence Plumbing and Heating, Inc.
Pipe Jobber: Southern Supply Co., Inc.

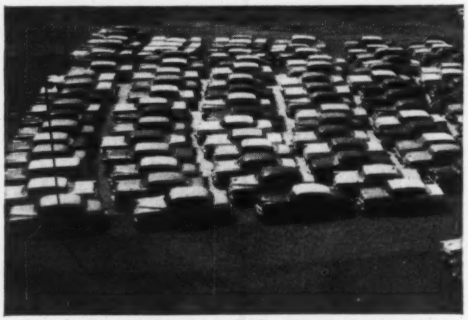
2000 skating enthusiasts or 200 parked cars make no difference with **steel pipe** on the job

Baltimoreans can be proud of their combined ice skating-parking area just outside the new Memorial Stadium. And with reason. In winter they can enjoy ice skating at its best. When crocuses harbinger spring, the rink disappears. In its place, a parking lot serves spectators of the events held in the adjacent stadium.

Versatile? Yes. Cost cutting, too—because of *steel pipe.* For *steel pipe* makes possible this dual-purpose area. When it's skating time, a *steel pipe* refrigeration system, imbedded in the 85-foot by 185-foot concrete slab, freezes 1½ inches of water into mirror-smooth ice. Yet, the *steel pipe,* acting as reinforcing in the concrete, has the structural strength to withstand the load of cars parked on the area during the spectator events seasons.

Only *steel pipe* can do this job so dependably, so economically. Its coefficient of expansion during alternate freeze/thaw cycles is comparable to concrete. Its strength, proved joining methods, durability assure virtually maintenance-free service. *Steel pipe* is the proved tubular product for refrigeration, for ice skating rinks, for vent and drainage, plumbing and air conditioning, transmitting gases and liquids. It serves well and long in such varied applications as electrical conduit, protective railing, fire sprinkler systems and other uses.

No wonder *steel pipe* is *first choice.*



The day-in and day-out weight and movement of cars offer no structural problem for steel pipe on this combined skating rink/parking area.

STEEL PIPE IS FIRST CHOICE

- Low cost with durability
- Strength unexcelled for safety
- Formable—bends readily
- Weldable—easily, strongly
- Threads smoothly, cleanly
- Sound joints, welded or coupled
- Grades, finishes for all purposes
- Available everywhere from stock

Insist on MADE IN USA Steel Pipe

C-4

COMMITTEE OF STEEL PIPE PRODUCERS

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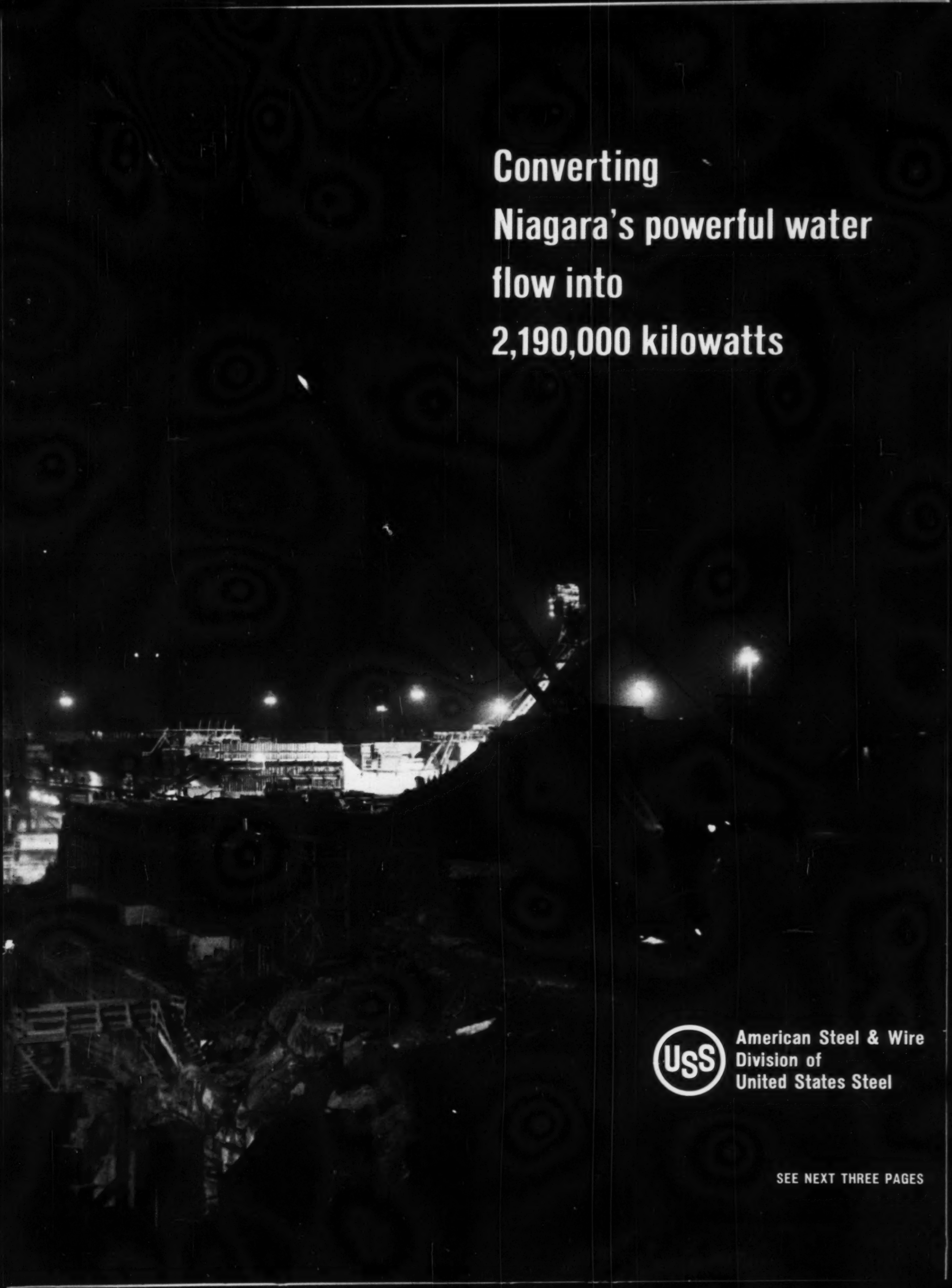

Converting
Niagara's powerful water
flow into
2,190,000 kilowatts
USS
American Steel & Wire
Division of
United States Steel
SEE NEXT THREE PAGES

Contractors move millions of yards of rock and materials with USS Tiger Brand Wire Rope

Before the first kilowatt of electricity is produced at the new Niagara Falls generating plant of the Power Authority of the State of New York, close to a billion dollars worth of construction will have been completed. At the main plant alone, 10 million cubic yards of rock and overburden were blasted loose and removed. Over a million cubic yards of concrete and 42,000 tons of steel will be placed. Altogether, in the five major projects that make up the job, some 42 million cubic yards of rock and earth will be moved.

Wire rope does the backbreaking work. Everywhere you look at Niagara you see USS Tiger Brand Wire Rope hard at work. Big shovels ram into the rock. Revolving cranes are pouring concrete and hoisting heavy turbine parts. Scrapers are scooping up muck to make a huge lake.

On all these jobs, wire rope supplies the connecting link that turns horsepower into profitable work done. One rigging superintendent who has been in construction for 26 years says, "I never cease to be amazed at the strength and capability of wire rope."

USS Tiger Brand reduces costs. Where costs are figured in fractions of a cent per cubic yard, every hour of extra service means dollars in the contractor's pocket. On seven revolving cranes rigged with special Tiger Brand Rope, they were getting long service to begin with—then they reversed the ropes and are getting double the life. This is just one case among many, where it paid to buy the best rope. Tiger Brand field service representatives were on the job at all times helping to make proper selections.

USS and Tiger Brand are registered trademarks

Engineering Consultants—Uhl, Hall and Rich—Boston

General Contractors:

Merritt-Chapman & Scott Corporation
  Intake structures and dredging; Water conduits, Section I; Niagara Generating Plant

Balf-Savin-Winkelman—Water conduits, Section II

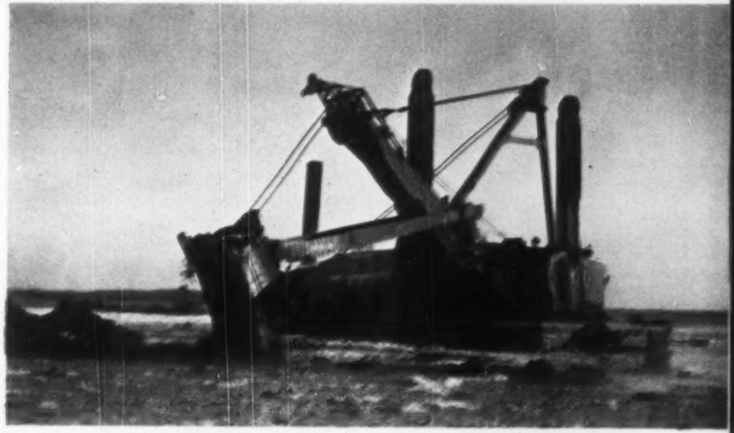
Gull-DeFelice—Water conduits, Section III

Channel Constructors—Peter Kiewit, Morrison Knudsen, Perini, Walsh—Tuscarora reservoir, aggregate plant and canal for the fore bay area, Section IV.

Tuscarora Contractors—Arundel, Hunkin-Conkey, L. E. Dixon—Tuscarora Pump—Generating Plant.

◀ **Niagara Generating Plant**—Eight giant revolving cranes, rigged entirely with USS Tiger Brand Wire Rope, are busy pouring concrete and handling materials. Extra long service life is being obtained from these ropes. And for preparation of this site, about 9 million yards of rock and overburden were removed with shovels using Tiger Brand.

Tuscarora Pump—Generating Plant—Pumps water into storage reservoir at night and generates power during the day. Photo shows turbine head cover being placed with USS Tiger Slings from one of the four gantry cranes. Hoist ropes have been in use about a year which is considered real good service.



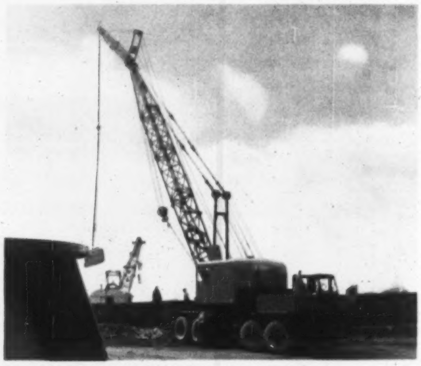
Dredging the intake—Second largest dredge on the lakes with the fastest cycle. Scoops 12 yards. 2" dia. USS Tiger Brand hoist rope must withstand considerable impact, vibration, corrosion and abrasion.

Piling rock at aggregate plant—Largest temporary crushing plant in the world. Produces 2,000 tons per hour. Conveyor booms are rigged with USS Tiger Brand Wire Rope.

Why USS Tiger Brand is your best buy. Tiger Brand Wire Rope is designed by one of the industry's most capable staffs of wire rope engineers. It is made by a company that maintains the most complete research and manufacturing facilities in the steel industry. When you buy Tiger Brand you get the right rope for the job. Experienced field service representatives are as close as your telephone. Write American Steel & Wire, 614 Superior Ave., N.W., Cleveland 13, Ohio, for further information, or contact your local USS Tiger Brand distributor.

AMERICAN STEEL
AMERICAN STEEL
TIGER BRAND
WIRE ROPE
165
1¼
WIRE

Pouring concrete with 6x30 special Tiger Brand Rope.


Handling materials with Spin-Resistant rope.

USS Tiger Brand Wire Rope for special uses

The tremendous variety of equipment used at Niagara Falls called for an even greater variety of wire ropes. Tiger Brand field service engineers were on the job to help make selections and offer money-saving tips on how to get the best service.

Jobs were analyzed and every type of wire rope needed was kept in stock for fast delivery. Everything from bulldozer rope to spin-resistant rope was supplied without difficulty. These are a few of the reasons why USS Tiger Brand is your best buy in wire rope. For complete information, call or write American Steel & Wire, Dept. 0392, Cleveland 13, Ohio.

USS
American Steel & Wire
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United States Steel

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Tennessee Coal & Iron — Fairfield, Alabama, Southern Distributors
United States Steel Export Company, Distributors Abroad

Steel

This mark tells you a product
is made of modern, dependable Steel.

Revolving rigging showing variety of ropes.

ENGINEERING NEWS-RECORD

Vol. 165, No. 15 October 13, 1960

Number of copies printed in this issue 86,638

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Back issues of ENGINEERING NEWS-RECORD *are generally available for the previous six months. Semiannual indexes will be sent on request.* ENGINEERING NEWS-RECORD *is also indexed in Industrial Arts Index and Engineering Index.*

THE CONSTRUCTION WEEK

TOKYO BIDDER LOW ON U. S. JOB—Asahi Chemical Industry Co. Ltd., is low bidder at $482,000 on the Interior Department's brackish water conversion plant to be built at Webster, S. D. The Austin Co., Cleveland, would supply all labor and most material as a subcontractor. Asahi would supply only membranes and gaskets for the electrodialysis desalter.

FHA HEAD RESIGNS—Commissioner Julius M. Zimmerman of the Federal Housing Administration has resigned, effective next week. Norman P. Mason, chief of the Housing and Home Finance Agency, will be acting FHA head.

AIA HEAD DITTO—Word is that Edmund R. Purves is resigning as executive director of the American Institute of Architects at year's end. Mr. Purves, at 63, is going into semi-retirement. He will be succeeded by William H. Scheick, who is a vice president of Timber Engineering Co. and a former executive director of the Building Research Institute.

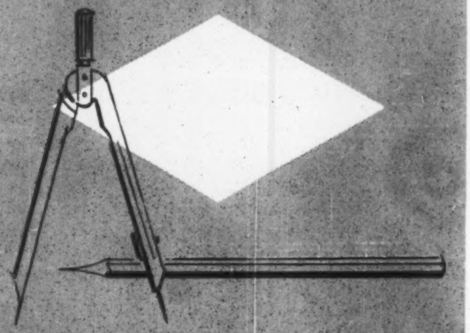
TWIN CITIES NEED SEWERAGE—A $100-million expansion of sewerage facilities will be recommended to officials of the Twin Cities by the Minneapolis-St. Paul Sanitary District next month. One-half to two-thirds of money would go for construction by 1970.

SIGNALS OFF—Don't look for a quick construction start on the 97-mile Florida Sunshine State Parkway, which appeared to be a sure thing about three months ago. The State Turnpike Authority canceled its contract with an investment firm to sell $57 million worth of revenue bonds after Governor-nominee Farris Bryant said he was opposed to the financing method.

PARTNERS AGAIN—Webb & Knapp Inc., New York City real estate development firm, and Aluminum Company of America will be joint venturers on a $40-million apartment and office building complex on Manhattan's East Side. The two are also joined in the $250-million Century City in Los Angeles.

TUNNEL JOB—California's Division of Highways opens bids November 16 on a third bore through the Berkeley Hills at Caldecott Tunnel on Route 24. The bore will be 3,371 ft long, with a 28-ft-wide road and a 4-ft-wide sidewalk.

STYMIED ON THE 19TH HOLE—Developers of a country club near Seneca, Md., planned to build $3 million worth of Paradise for golfers—18 holes in rolling countryside, showers, lockers and, for refreshment, an amply stocked bar. Then, disaster. They discovered their site sits 200 ft inside Darnestown Election District. It's dry. Developers are trying to get the boundary redrawn.



HOW TO DESIGN A TRADEMARK

Why, it's easy as A-B-C. Just start with a simple shape, one that's readily identified and easily remembered. (The Jenkins Diamond is a good example.) Then just fill in the blank spaces. That's all there is to it, and almost anyone can do it!

HOW TO MAKE IT MEANINGFUL

Ah, that isn't so easy nor so simple.

A trademark is like a man's signature: it can mean much or it can mean little.

Time and *performance* make the difference.

Take the Jenkins Bros. trademark. There's nothing tricky about the design, certainly nothing fancy about the words.

Yet buyers and specifiers of valves everywhere know and respect this simple device, this mark.

Why? Because in all the years since 1864 there has been no compromise in the *quality* of Jenkins Valves. We know it; you know it.

And that is the only way we know to make a trademark *meaningful*. That will always be the Jenkins way of making valves.

JENKINS ®

Jenkins Bros

JENKINS BROS., 100 PARK AVENUE, NEW YORK 17

WASHINGTON OBSERVER

- **Aid for Latin America nearer**
- **Gates and labor leaders come to terms**
- **Employment down**

- **Plans for Washington's new program of development aid for Latin America are in the works.** Details and project priorities have not yet been finally decided by the new Inter-American Development Bank, which will administer the program.

But here are some initial requests. They indicate the types of ventures that may get the first long-term, low-interest rate loans from the special $500-million fund pledged by the U. S.

A $1-million hospital for the aged in El Salvador's capital city of San Salvador, proposed by a state welfare agency.

A $5-million expansion of the University of Chile Medical School at Santiago, including a new building and technical laboratory equipment.

A network of water-supply systems to service smaller cities, proposed by the governments of Colombia and Venezuela.

- **Some off-the-record understandings were reached at last week's Defense Department meeting on missile base labor problems** (see p. 36).

Secretary Gates gave the unions to understand he would go down the middle on issues involving work allocation to industrial or construction unions. But contractor sources say Mr. Gates also gave the building trades the feeling he would lean their way on disputed work if they could make out a good case.

On the other side, the labor leaders were asked to agree to give Mr. Gates a no-strike pledge, in return for a no-lockout pledge on the part of employers. Labor officials agreed to do all they could to prevent jurisdictional disputes from becoming work stoppages.

The labor leaders told Mr. Gates that jurisdictional disputes are an inevitable part of the building trades way of life—but they said that if they had to suspend their family feuds to help the missile program, they would do so.

Contractors have to go along with all this. But there is some worry about government pressure for quick settlement of any negotiations between a contractor and his building trades union. The fear is that such pressure in the end will tend to force the contractor to make concessions he might otherwise want to resist longer and harder. Contractors worry that this situation could spill over from base work into other government jobs less directly concerned with national defense.

- **Government experts find the employment-unemployment outlook fuzzy in construction and other industries.**

This week's report shows a slight but seasonal decline in construction employment—along with seasonal declines in both employment and unemployment in other industries.

Over-all, though, the total employment figure of 67.8 million remains at a record level while unemployment, at 3.4 million, is declining seasonally, showing no real improvement. Manufacturing unemployment at 800,000 is high, as it has been for the past four months.

Streets are back in use faster
WHEN YOU SPECIFY CLAY PIPE
with Factory-Made Compression Joints

Speed is important in any sewer project. But when the project ties up an important artery of traffic, every hour counts. Lower Allen Township, adjacent to Harrisburg, Pa., solved this problem the modern, efficient way: Vitrified Clay Pipe with new factory-made compression joints.

CONSULTING ENGINEERS: Gannett Fleming Corddry and Carpenter, Inc., Harrisburg, Pa.
CONTRACTORS: Intercounty Construction Corp., Hyattsville, Md. Berlanti Construction Co., Harrison, N.Y.

These outstanding new joints go together fast . . . keep labor costs down . . . yet provide a tighter, longer-lasting seal that stops roots and controls infiltration to the most rigid specifications. Before you specify any sewer line material, investigate the advantages of never-wear-out Clay Pipe with factory-made compression joints.

WRITE TODAY for assistance in fitting Clay Pipe into your sewer project . . . and be sure of the lowest cost with the best performance.

NEW
COMPRESSION JOINTS
MAKE CLAY PIPE
BETTER THAN EVER!

Vitrified **CLAY PIPE** *Never Wears Out*

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Heard in the corridors at the AGC meeting . . .

"The government oversold our hopes."

"We're overloaded with equipment."

"Everybody bids too tight."

"We're keeping older equipment and not buying in anticipation."

"It's hard for the general contractor to compete with the broker type."

"If I knew where business was good, I'd go there."

'60 Business Under Expectations

"We've got a bad case of the 'overs' to get over," said an Alabama contractor at the Associated General Contractors midyear board meeting in Phoenix last week.

"The government oversold our hopes, we overplanned and overbought. And now we're overloaded with equipment, personnel and bills. Business is not up to what we had been led to expect," he said.

"Worst competition in history" and "few profits" were typical comments.

From an easterner: "Contractors appear to be pricing at cost and many are working at no profit."

Said a southerner: "Same old story—everybody bids too tight."

Said a westerner: "Still cursed with too low bidding. A few more bankruptcies and insolvencies should reduce pressure of hysterical bidding."

The dirges sounded despite a report by James D. Marshall, AGC executive secretary, that "in the first eight months of 1960 the volume of new construction put in place was only 3% below the record level of the corresponding period of last year, and that estimates indicated the value of 1960 work put in place should be close to last year's high of $56 billion."

The anticipated total is $55.8 billion, a decline of less than a half of 1%, he said.

The sounds of distress extended to contractor-planning for the next year—especially in the field of equipment purchase. Said a westerner: "We're getting more work out of what we have. We're keeping older equipment and not buying in anticipation. Dealers are conservative on turn-ins. Good used equipment is easy to get at auctions, which seem to be on the increase."

An easterner echoed the sentiment: "Not a day goes by without ads for auctions crossing my desk. Like so many others—we're making do."

"We're not getting a real price break on equipment," said another.

Pricewise? "We're being treated awful," said a midwesterner. "Competition is vicious. Lots of contractors are pricing themselves out of business. If I knew where business was good, I'd go there."

M. Clare Miller, San Ore Construction Co., McPherson, Kan., nominated president of the AGC, set the association's theme for the year as "retention of the market."

"We're seriously in jeopardy in the highway and building fields. It's up to the AGC to point out the benefits—and the needs—of highways and schools and make an all-out educational endeavor to impress on the public an across-the-board work program," he said.

Delegates were told that somewhat normal conditions should prevail for the rest of 1960, based on member estimates as received in a nationwide questionnaire.

The results included:

Building construction: 62 said business was below normal; 54 normal; 27 above normal.

Highway construction: 56 normal; 49 below normal; 23 above normal.

Heavy, municipal, utility construction: 67 normal, 46 below normal; 21 above.

James Marshall told delegates, "Volume has increased each year for many years, yet net profits are getting less and less as volume increases. It appears now that our present dilemma cannot be cured by increased work alone, but must be cured by better pricing by individual firms and by reduced costs of production.

"In building construction the broker type of general contractor seems to have made many speculative owners think that they can dispense with the general contractor and award separate contracts themselves. They come out with costs, which perhaps are a little greater but are to be offset by tax gimmicks and financial manipulations that doing the work themselves might provide.

"It is hard for the average, substantial, well established local building contractor to compete with a broker type who is a chiseler and comes in for a job, but leaves in his wake, on his way to the next area, a trail of broken subs."

Committees pointed out two other prime disturbing situations:

- **Architects and engineers employed as designers by government agencies instead of in a professional capacity; and the new role of architects as promoters, designers, and supervising contractor in a whole project.** Mr. Marshall said this trend would tend to lose for the country very valuable special services of men who, in their professional capacity in the past, have not only represented clients and represented the fair treatment of the contractor in his relation-

. . . Architects' role is another problem

ships with the client, but actually represented the lenders and the other sources of money for the mortgages in this country by seeing to it that standards are adhered to.

- **Do-it-yourself in industry by owners at the urging of workmen and unions** displaced from the mass production industries because of automation, loss of markets, and the rapidly rising cost of labor in those industries.

Among major actions at the general board session, the AGC:

- Unanimously approved opposition to the Small Business Administration program of construction contract set-asides. Any restriction on open competitive bidding for public works is not in the public interest, AGC says. It is a "wedge to grind big business into even more pressure of federal bureaucracy."
- Unanimously adopted a statement requesting immediate appointment and activation of a special committee to meet with the Corps of Engineers Ballistic Missiles Organization to expedite and facilitate construction of missile bases.
- Endorsed a stepped-up apprentice and safety education program to stem the large number of apprentice drop-outs in the industry. As Ira Hardin, Atlanta, Ga., chairman of the safety committee noted, "The job is to train—and to re-train. Those who came in the 'back door' now are established in the crafts. The apprentice of today is the superintendent of tomorrow and must be indoctrinated in safety and accident prevention."

The labor committee recommended that the national association reaffirm its policies of recommending legislation that would grant court review of actions of the Secretary of Labor in administrating the Davis-Bacon Act, and related prevailing wage laws. It opposed legislation that would extend coverage of the Davis-Bacon Act and include fringe benefits.

It was the consensus of the labor committee to continue efforts to develop a voluntary plan for settlement of disputes other than jurisdictional. Such a plan would embody the principle of a no-strike no-lockout during processing of the dispute.

Homebuyers Becoming Choosier

Home buyers and other consumers of building-industry products will be harder to please than ever during the next 10 years. Building materials' manufacturers emphasizing product novelty rather than utility and performance will fall by the wayside.

So predicted Elmer A. Lundberg, new president of the Producers Council, Inc. at the annual convention in Chicago last week. Producers Council comprises 200 manufacturers and other representatives of the building industry.

Convention speakers forecast the following trends for the next decade:

- A tremendous increase in the use of plastic construction materials, from 3% of the total of all building materials to about 25%.
- Increased use of sprayed-on roofs and other labor-saving techniques.
- Lighter, more durable, more weather-resistant curtain wall panels. They will also be better insulators than today's products.

Urban renewal projects, which are fast becoming one of the nation's biggest business enterprises will pose a challenge to the building industry, according to Philip Will, Jr., president of the American Institute of Architects. "They call for greater teamwork between designer, supplier and builder, more political support of urban redevelopment, and improved product engineering and design," said Mr. Will.

A preliminary report on a recently begun study of changes in marketing practices in the building industry came up with several significant findings:

- Builders generally prefer to deal with suppliers rather than factories.
- They place top priority on prompt deliveries.

Preliminary findings also pointed up the need for materials' manufacturers to become more acquainted with local contractors' problems. Homebuilders, though they are more interested in using new materials than general contractors, are reluctant to try them because of local code provisions. General contractors are generally more conservative. They are generally more tightly controlled by the specifications in their contracts.

Voluntary contributions from the Producers Council members will finance the $75,000 study. During its three-year program, it will also project trends and spell out the needs of the construction industry.

Annual growth in total construction volume should vary between 3.2% and 5.8% during the next decade, according to an economist on the program. Growth rate in Gross National Product is estimated at 5.3% per year. Though the labor force will expand greatly, the length of the work week is expected to remain almost constant. Productivity should rise about 3% annually.

Flemming

Definite goals for the National Conference on Water Pollution were set forth last week by Arthur S. Flemming, Secretary of Health, Education and Welfare, speaking at the 33rd annual meeting of the Water Pollution Control Federation at Philadelphia.

The Secretary sees the December meeting as "not just a friendly discussion" but a constructive citizens' conference that should:

- Specifically identify the controversial issues.
- Assure that both sides on these issues are heard.
- Recommend what action should be taken.

While stressing that pollution abatement is a joint problem concerning local, state and federal governments, Mr. Flemming said that additional federal action is necessary. In outlining the role of the federal government in pollution control, he said it should:

- Collect and disseminate information.
- Stimulate research by grants to schools and other organizations while maintaining a research program of its own. The federal government should also oversee the complete research effort and see to it that results are effectively applied.
- Continue program grants to pollution control authorities and similar state agencies.
- Continue construction grants for sewage treatment plants to draw out local interests.
- Help in comprehensive water pollution control planning in conjunction with state and local governments.
- Provide training at federal research centers, such as the Taft Center for local and state personnel.
- Handle pollution control in interstate waters.

Regarding the controversial issue of construction grants for sewage treatment facilities, the Secretary praised the system now in effect and claimed that for every $1 the U.S. government appropriated, local government put up nearly $5. Since the program's inception, $844 million in local money has been attracted by $175 million in federal participation.

Enforcement provisions of the Water Pollution Control Act should be strengthened and Congress has been asked to do this, Mr. Flemming said. He noted that not one industrial concern had failed to act after notification by the federal government of a violation. (But he also cited the suit filed by the Justice Department against St. Joseph, Mo., as an example of community inaction, ENR Oct. 6, p. 17.)

Sets Goals for Pollution Meeting

He said the enforcement provisions in the law, although working fairly well, should be amended:

- To apply to any navigable interstate stream whether or not there is interstate pollution, but only at the request of the state.
- To permit a municipality to request federal enforcement action, but only with state concurrence.
- To strengthen the force of a formal order by the Secretary. Issued after recommendations by a hearing board, it would become effective after a 60-day period during which the defendant could appeal to a Circuit Court. This would give the Secretary's order the same force as a formal order from the Interstate Commerce Commission or Department of Agriculture.

The four-day gathering also included a full program of technical meetings and reports.

Three speakers painted a mixed picture on where we stand in the campaign against water pollution. It looks pretty gloomy to state administrators and research directors. An industry representative summed up industrial progress with more satisfaction.

Curtiss M. Everts, director of the sanitation and engineering division of the Oregon State Board of Health, polled state and interstate water pollution control administrators as to the status of the effort in their individual areas, the devices used to indicate progress, and the needs.

All reported some progress, he said, based on the number of treatment plants built and improvement in water quality. But all are hampered, he concluded, by shortcomings in manpower, public information, financing methods, yardsticks for measuring progress, and agreement on objectives.

The agencies have enough knowledge now to clean up much existing pollution, he declared, but too little manpower. Their staffs are too small to maintain regular surveillance of water sources and waste treatment facilities. Engineers and other personnel are not being trained fast enough to fill existing vacancies, much less provide for needed program expansion. Enforcement activities can't be carried out effectively without more technical and legal personnel. And operator training lags behind the construction of new treatment plants.

Public information programs need to be strengthened to explain accomplishments, reasons for new problems, and needs for new help, the poll showed. Much that has been written and said to sell pollution control has been addressed to people already convinced, he said, and too little to those who accept or reject bond issues.

Sewerage financing methods, unchanged for 50 years, said Mr. Everts, should be simplified.

There are no suitable criteria acceptable both to technical people and to the public for gaging progress toward pollution control objectives.

The objectives themselves are a matter of some confusion. The various interests concerned with conservation, use and management of water resources do not agree on the quality of water required for specific uses.

Only a few state administrators think we need stronger state laws, Mr. Everts reported. Many expressed the opinion, he said, that we have enough laws now and should use them as effectively as possible before asking legislators to pass new ones.

Newspaper editors polled in some key areas agreed in general with the administrators. The consensus was that there was some progress, but programs were moving too slowly. Mr. Everts detected in the editors' comments an attitude of "cautious frustration," a feeling that after years of fighting for pollution control and seeing some progress, "there seem to be as many or even more problems."

Harry G. Hanson, director of the U. S. Public Health Service's Taft Sanitary Engineering Center in Cincinnati, reviewed the status of U. S. research in water pollution control and water supply.

"One senses a fragmentation of program," he said, "a lack of coordination among projects, overattention to refinements on one hand and inattention to major problems on the other."

There is also a paucity of money and people, he indicated. "We may estimate that 350 professionally trained persons are engaged in full-time and part-time water supply and pollution control research in the U. S.," he stated. In 1958, he said, only $3.5 million from all sources was estimated to be spent on water supply and pollution control research. About half of that amount was contributed by the federal government, he said.

Mr. Hanson said that the sources and complexity of wastes seem to be getting too much for our streams to handle in the traditional manner. "More and more, it appears that we can depend less and less on the stream to treat our sewered wastes," he declared. "Its capacity will have to be reserved for unsewered wastes, for a factor of safety and for the residual demands of wastes after we have given them the best treatment we know."

Arthur H. Flemming

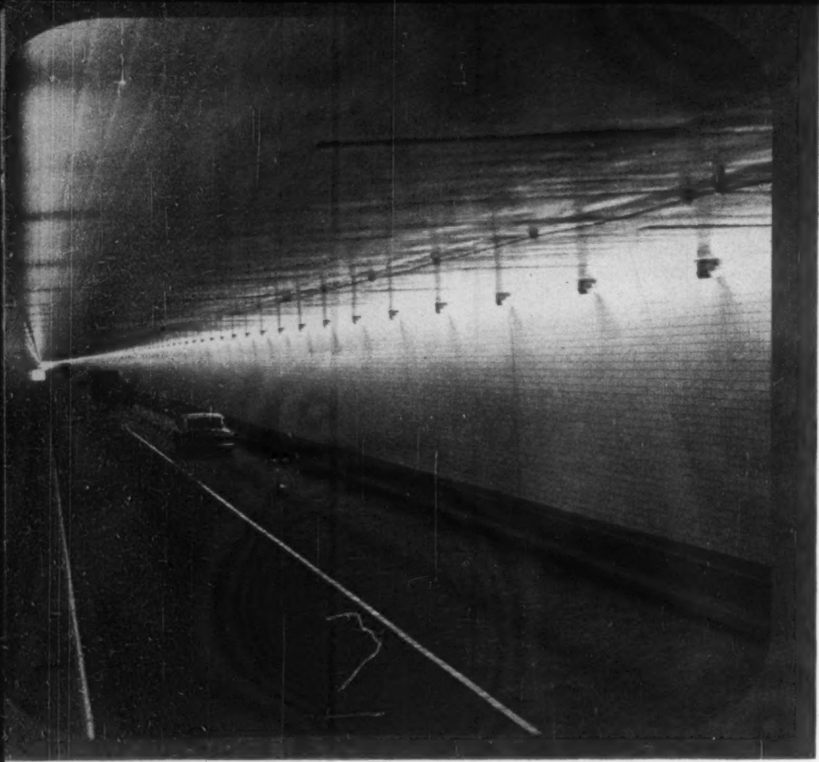
Industry is doing better than average in the national effort to control pollution, according to the report by A. J. Steffen, sanitary engineering director for Wilson & Co., Chicago meat packing firm.

Industry is spending millions of research dollars that don't show up in the records as research, he declared, because it is usually classified as product research. Much of it is spent in an effort to find ways to utilize and conserve wastes.

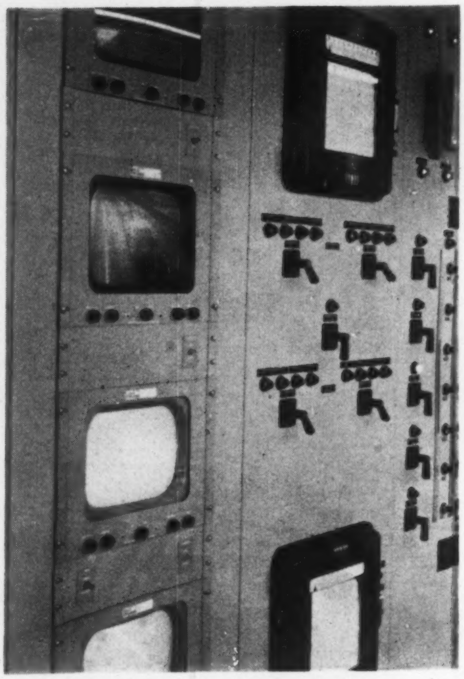
Industry's waste treatment needs are being met at least as fast as those of municipalities, according to Mr. Steffen. A poll of state administrators of stream pollution control programs indicated that even though municipal treatment plant construction has outpaced that of industry during the last 10 years, industry's needs have declined more, he said. The two segments are about even in proportion of total waste treatment needs provided for. In 1950 just under half the municipalities and industries that needed treatment had facilities for it. Now the proportion has risen to just under three-quarters in both categories.

Over 1,500 of WPCF's 9,000 members met at the Philadelphia convention to study and discuss the latest developments in sewage treatment equipment, research, and methods.

Sessions were held on industrial wastes, public relations, maintenance, research, waste collection systems and small plant design and operation. There also were an operators' forum and an industrial wastes forum. The program included 13 technical sessions with about 50 papers.



Eight television cameras pick up images of tunnel traffic.



Operator monitors both tubes'

TV Sets With Only One Program:

Cars are always under a TV eye.

Two trucks broke down within 10 minutes in Pittsburgh's Fort Pitt Tunnel during a morning rush hour last week. The two stalled vehicles threatened to reduce the tunnel's 50-mph movement to a crawl. But before the two drivers could get out of their cabs to look for telephones to call for help, repair trucks were at their sides.

The tunnel traffic directors were able to avert this potential jam, because they watch the entire length of both the tunnel's two, 3,600-ft tubes on a closed-circuit television system.

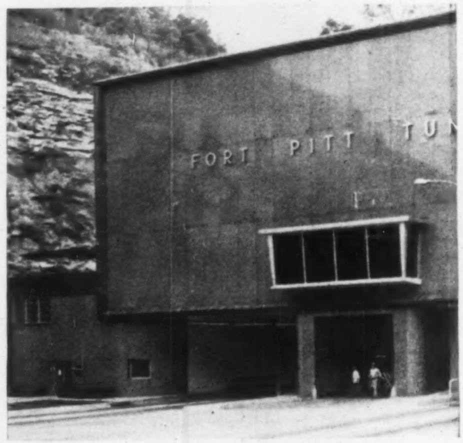
Four television cameras, each feeding its signal to a separate monitoring screen, scan traffic in each tube in the direction of traffic flow. The eight TV receivers are installed in the control room at the south ventilation building. Operators viewing the screens can alert repair trucks the minute trouble develops.

The closed-circuit television system is designed to complement and, eventually, supersede the signal buttons installed every 250 ft in the tunnel and the telephones at 500-ft intervals.

The four cameras in each tube are spaced so that 1,000-ft intervals separate three of them and the fourth is only 500 ft from its neighbor. The fields of vision of the cameras overlap; a car picked up on camera No. 1 moves smoothly into No. 2 and so on out the other side.

Half of the cameras are in intensive lighting zones and are equipped with irises that can be remotely controlled to adapt to changing lighting conditions. Lens apertures on the other four cameras are changed manually. All cameras are mounted on universal joints to permit a variety of pictures. Bronze housings protect them from dust and from water thrown up by tunnel cleaning equipment.

Michael Baker, Jr., Inc., consulting engineers of Rochester, Pa., designed and supervised construction of the



Emergency repair truck is kept

traffic at control room panel.

Traffic

$40,000 system. Philco Corp. produced the equipment. Tydings Electronics, Inc., of Pittsburgh, installed it under a contract held by E. C. Ernst Co.

The Fort Pitt Tunnel runs under Pittsburgh's Mount. Washington, just across the Monongahela River from the Golden Triangle, and connects at its north end with the new Fort Pitt Bridge (ENR Nov. 19, 1959, p. 64). The tunnel's two tubes are at the same level at the south end, but open at the north at different heights to connect with the double-deck bridge.

under the tunnel control room

Interstate Funds Speeded Again

For the second time this fiscal year, Commerce Secretary Frederick H. Mueller has authorized a speedup in work on the Interstate and ABC highway systems. He has made available to the states for immediate use $718 million in federal-aid funds that originally were set aside for the quarter starting Jan. 1, 1961.

Mr. Mueller said his action would "enable states that are in a position to do so to further expedite planning and construction work. . . ." A Bureau of Public Roads spokesman said indications are that New York, Illinois, Texas, Wisconsin and North Dakota will realize the quickest benefits.

No state-by-state breakdown is available showing what backlog there is in apportioned but uncommitted funds. A BPR spokesman said figures for September were still being compiled and that figures for July and August alone would be misleading.

The speedup in highway fund allocations comes only a month before the elections and at a time when the economic outlook has somewhat dimmed. But officials insisted political considerations have nothing to do with it.

They point out that Mr. Mueller said last June that adjustments would be made whenever it appeared from long-range estimates that there would be sufficient revenue in the Highway Trust Fund to warrant them.

Under a previous adjustment, Mr. Mueller allowed the states to obligate $1.6 billion in federal funds in the July-September quarter. This meant apportioning in one quarter what originally was scheduled for two quarters (ENR June 30, p. 19).

The release of the additional $718 million brings to $2.3 billion the amount made available since July 1.

The Commerce Department originally announced that a total of $2.9 billion would be available for the highway program for all of the current fiscal year. The two speedups would indicate that this total may be increased if projections of estimated revenues in the Highway Trust Fund permit.

Do-It-Yourself Design Defended

While many state highway departments have to justify the amounts they pay private consultants for design work, California's Division of Highways last week had to explain why it does all its own design work and never engages consultants.

Critics of the division have claimed that its engineering costs are running 24.1% of road costs, whereas consultants could do the work at less than 5%.

The division's design work costs less than 6% and it would be more expensive to engage consultants, replied State Highway Engineer J. C. Womack.

He claimed that the 24.1% figure was arrived at by combining preliminary engineering expenditures during the 1957-1958 fiscal year, 13.7% of construction costs, and the cost of construction engineering, 10.4%.

"Construction engineering costs certainly pertain to the construction expenditures in the same year," he said. "But preliminary engineering costs in any year have little relation to construction expenditures in that year.

"This is particularly true in a period when engineering studies are being initiated on long-range future construction and during a period when each successive annual construction program has increased from 10% to 35% over the previous fiscal year.

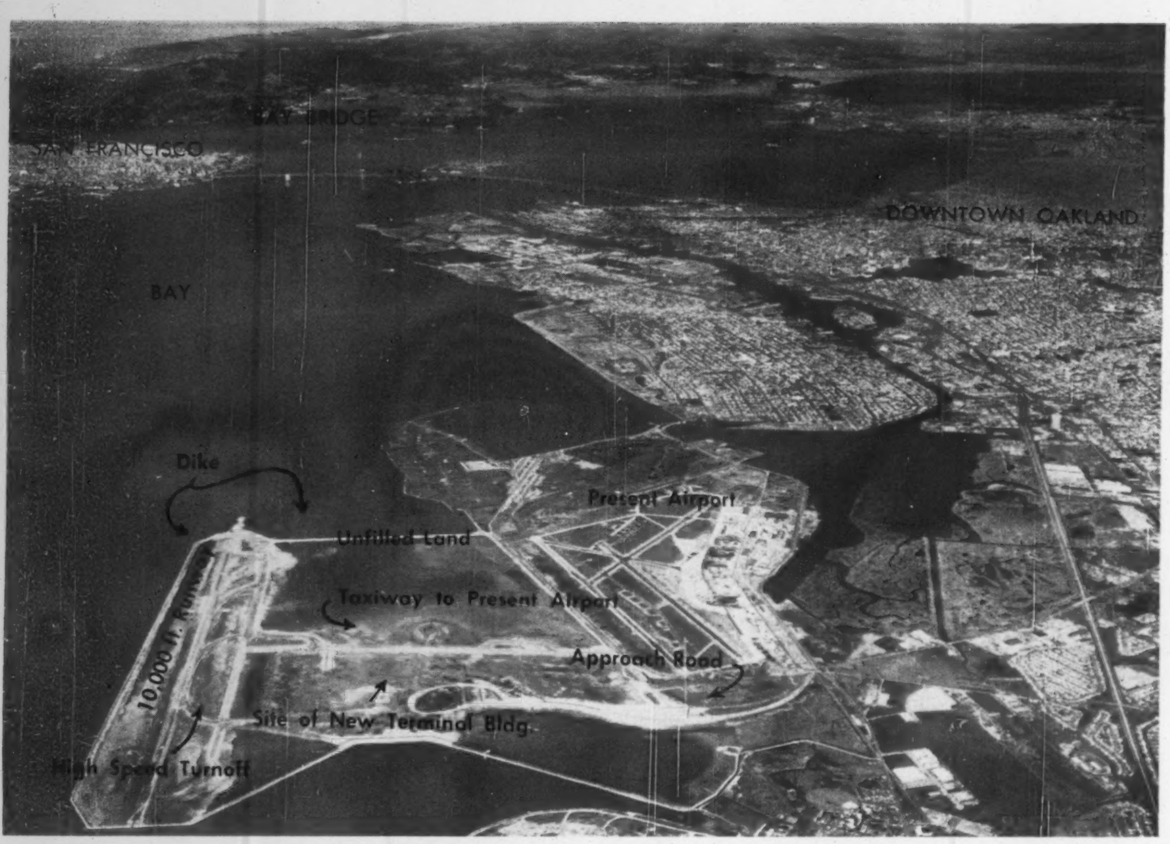
"Comparison of total preliminary engineering against a design-only fee of 5% is a distorted and improper comparison," Mr. Womack said in Sacramento last week. He said that the reported preliminary engineering expenditures include very sizable costs of traffic studies, route studies, public hearings, right-of-way engineering for property descriptions, extensive materials exploration and other items, in addition to bare design cost of current and future year construction projects.

To find its actual design costs, the division made a study of detailed accounting records of 49 projects.

"It was found that design costs varied from 2.2% to 20.3%, with an average for all jobs of 5.98%," said Mr. Womack. "Using charts published by the American Society of Civil Engineers, we conservatively estimated consultant costs for design on these same projects would be 5.3%."

Mr. Womack claims that the cost of the state and liaison, maintaining and supplying basic data necessary for design, and review of the consultants' work would exceed the difference between the 5.3% consultants' fee and the state's 5.98% average cost.

The division estimate of consultants costs is almost 50% above the average fees reported early this year by the National Society of Professional Engineers. The NSPE figure was 3.55% of construction costs. (For a closer look at the California Division of Highways, see p. 89.)

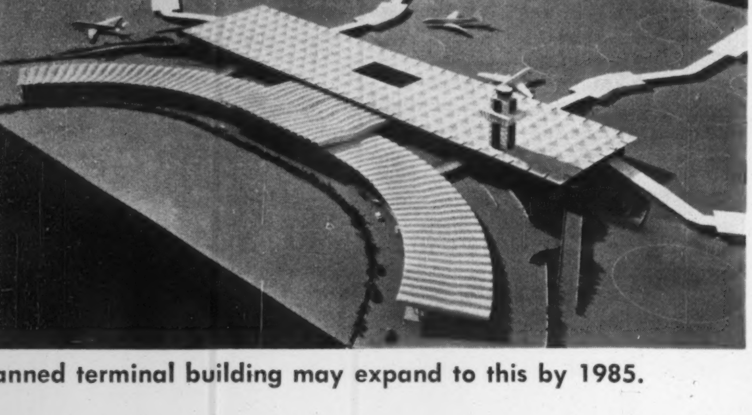

BAY BRIDGE
SAN FRANCISCO
DOWNTOWN OAKLAND
BAY
Dike
Present Airport
Unfilled Land
Taxiway to Present Airport
10,000 ft. Runway
Approach Road
Site of New Terminal Bldg.
High Speed Turnoff

Fourteen million cu yd of sand form site of new runway and terminal as . . .

Oakland Builds for the Jet Age

The expansion program at Oakland International Airport has gone into high gear with the award of a $5.2-million contract to Utah Construction & Mining Co., San Francisco, for the main terminal building. The new structure and an accompanying 10,000-ft jet runway are scheduled for completion early in 1962.

The expanded section of Oakland International is located on a T-shaped fill, one of the largest ever made in San Francisco Bay. The single north-south runway lies nearly two miles out in the bay (ENR Aug. 19, 1954, p. 43).



Planned terminal building may expand to this by 1985.

More than 14 million cu yd of sand was dredged from the bottom of the bay and piped to the site over distances ranging up to five miles. Originally designed for a 8,600-ft runway, the fill had to be extended soon after completion when changes in FAA regulations required a 10,000-ft runway. Utah Construction did the initial dredging in 16 months under a $5-million contract. The extension of the runway cost another $500,000.

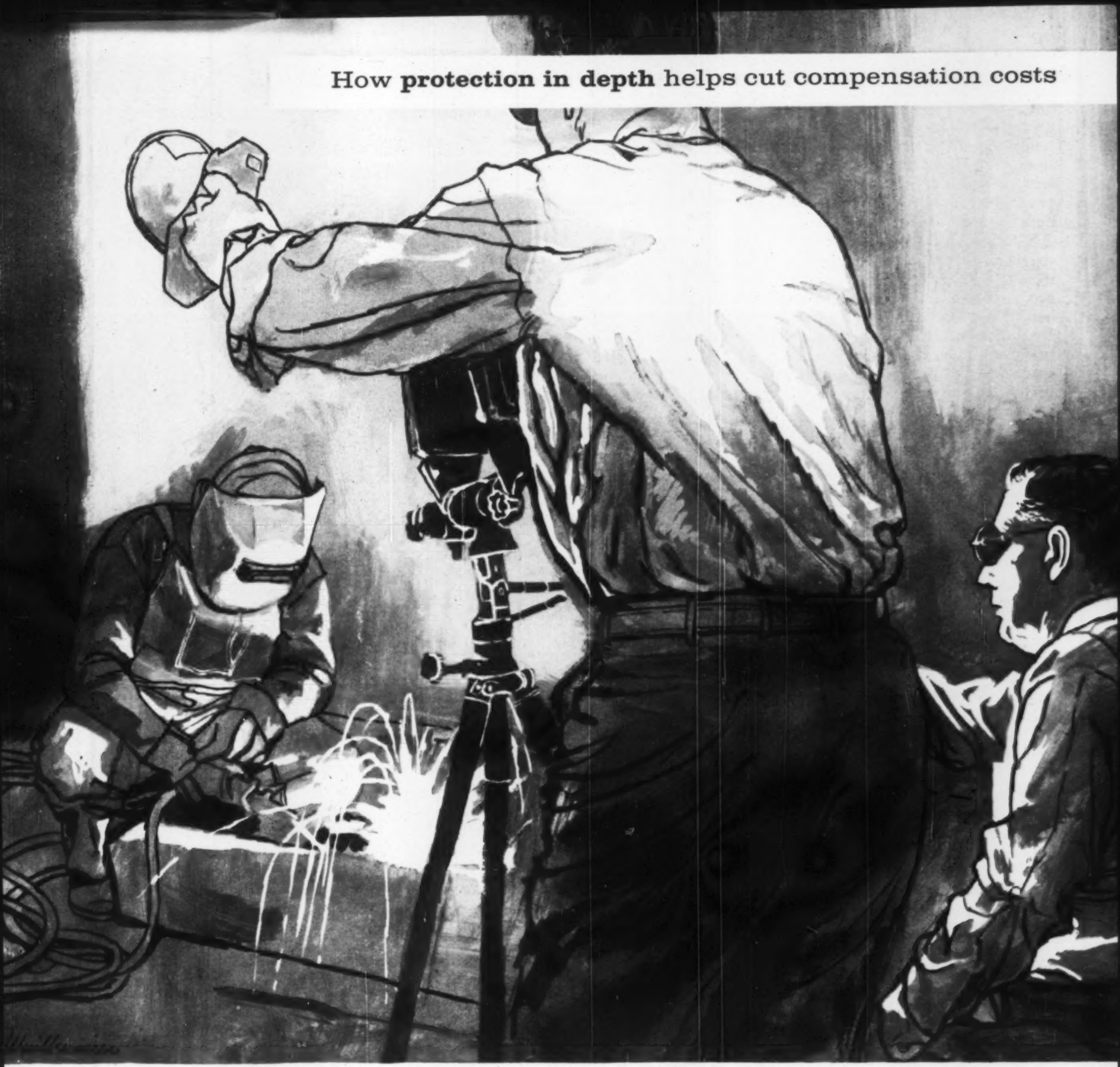
Rock brought in by barge was used to top the fill, which originally had a height of 9 ft. The fill has subsided to 7-ft height, and another foot of settlement is expected before 1962, according to soil engineers. The runway will not be paved until settlement is essentially complete.

A 4½-mile-long, 12-ft-high dike protects the fill from encroachment by waters of the bay. Within the dike are 800 acres of land still under water. Much of it could be reclaimed for future expansion.

The main terminal building is

(*Continued on p. 32*)

How **protection in depth** helps cut compensation costs



Reducing accidents by filming the hazards

Sound slide films are great for teaching people. Like teaching safe practices to workers, from welders to sales clerks, from machinists to loggers. More than 500 such training films have already been produced by Liberty Mutual to help policyholders reduce on-the-job accidents and losses. Each film is custom made, using policyholder personnel and facilities in the pictures. This is but one of the many Liberty Mutual services that add up to protection in depth. For more facts about Liberty's protection in depth and how it can help you lower your business insurance costs, get in touch with your nearest Liberty Mutual office.

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Business Insurance Workmen's Compensation, Liability, Group Accident and Health, Fire, Fleet, Crime • Personal Insurance: Automobile, Fire, Inland Marine, Burglary, Homeowners' planned so that ticket counter, lobby and aircraft loading facilities can be expanded independently. This flexibility of design was required for two reasons.

One was long-time disagreement among Oakland officials over required terminal size; adoption of a conservative point of view led to inclusion of built-in expansibility in the design.

Second was current uncertainty as to size of future aircraft. Current trend is to larger aircraft to carry more passengers, with fewer planes necessary to handle a given number of passengers. If this trend continues, more ticket space and comparatively less loading space will be required.

But few aviation experts are willing to predict what the next 20 or 25 years may bring.

The terminal will comprise two connected buildings, with total area of 175,000 sq ft. The ticketing building will be a curved, glass-fronted structure 500 ft long, with a conoidal canopy over the front sidewalk and parking lane. To the rear will be the two-story terminal building proper, which will house concessions, waiting rooms, observation platforms and airline offices. Rising from the central portion of this building will be the 11-story control tower, featuring a cantilevered cocktail lounge on the eighth floor.

Initially, 10 aircraft parking gates will be built on a single finger extending from the rear of the terminal. There will be space for three more such fingers, which can be double decked.

The single runway is located to handle commercial aircraft in 98% of all possible wind conditions, smaller aircraft will use the criss-cross runways of the old Oakland airport. The runway will have high-speed (60 mph) turnoffs to taxiways.

The expansion is being financed primarily by a $10-million bond issue approved by Oakland voters in 1953. About $6 million more in federal funds has since been made available. Port of Oakland funds will be used to pay the remainder of the estimated $20-million cost, which includes modernization of runways and hangars at the existing airport.

Despite progress on the expansion program, officials are worried about declining air traffic at Oakland International.

Only 130,000 passengers used the airport in 1958, as opposed to 167,000 in 1955. San Francisco airport gained 700,000 passengers in that period, bringing its traffic to 1.7 million. Air freight and mail volume have also declined at Oakland.

Port of Oakland officials are expected to enter formal pleas for additional service with the Civil Aeronautics Board this fall.

Maine Gets First Six-Lane Bridge

Tukey's Bridge is Maine's first six-lane span and the latest crossing of a channel first bridged in 1796. The 500-ft-long structure crosses the mouth of Back Cove and is part of Interstate route 295, the "Portland Loop" of Interstate 95, which bypasses the city.

The new bridge is a four-span plate girder structure that carries two 38-ft roadways separated by a 4-ft median, with a 4-ft sidewalk on one side. The bridge has 30-ft clearance above high water. The six-lane span replaces an old drawbridge.

W. H. Hinman, Inc., Westbrook, Me., built Tukey's Bridge under a $3-million contract that included two grade separation structures on the south shore and a pedestrian overpass on the north side.

High Mountain Sheep Wins Round

Backers of High Mountain Sheep Dam have scored over Nez Perce proponents in preliminary skirmishing before Federal Power Commission investigators.

An FPC technical staff studying the rival applications for power and flood control projects on the middle Snake River along the Oregon-Idaho border gave High Mountain Sheep the edge last week. They placed their findings in the record for the FPC hearings starting November 4 (ENR Sept. 15, p. 24).

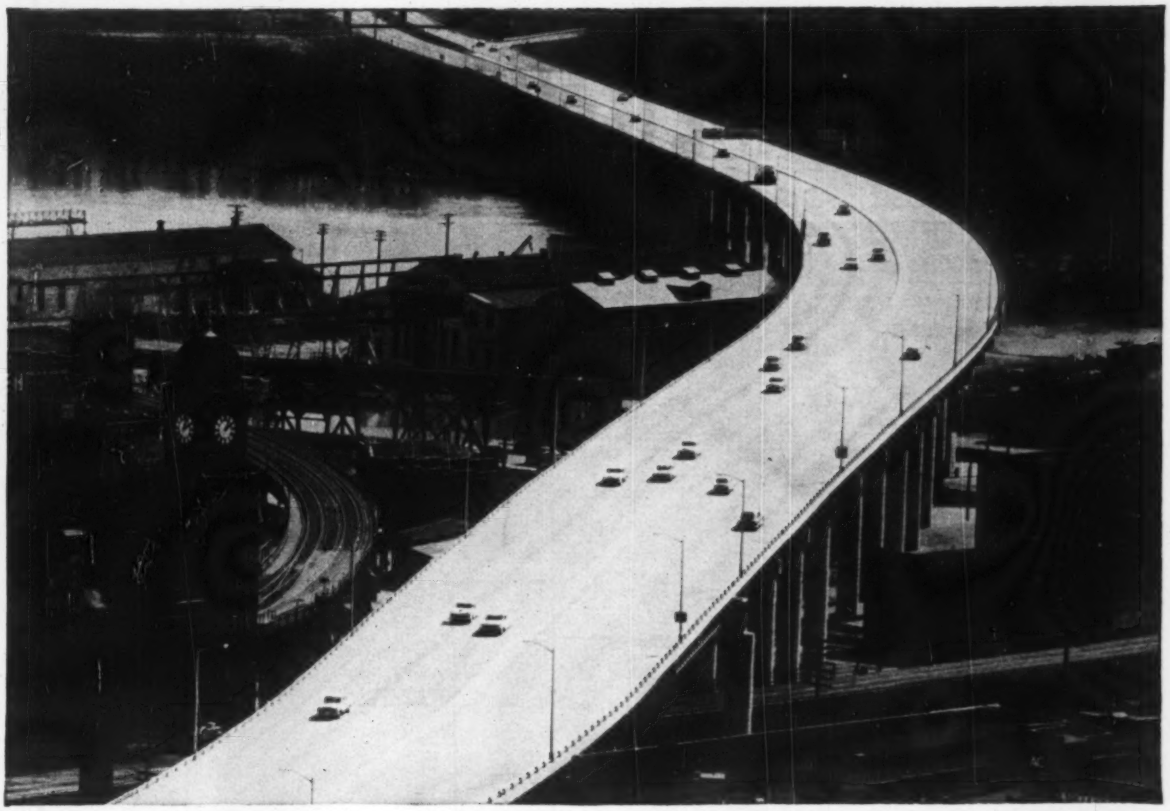
The studies were based on several parallel basic assumptions as to starting time and interest rates. On the assumption that either project could be completed in 1967, High Mountain Sheep would have a 178,000-kw prime-power advantage, the investigators said. At 4½% interest, High Mountain Sheep would cost $609,000 a year less than Nez Perce, they reported.

In economic feasibility studies, the investigators gave High Mountain Sheep a benefit to cost ratio of 1.47:1 against a 1.35:1 maximum and a 1.22:1 minimum for Nez Perce.

Designs for both projects were considered competent and safe.

The technical staff gave general acceptance to the applicants' cost estimates, adjusting them to $190.7 million for High Mountain Sheep and $425.9 million for Nez Perce.

High Mountain Sheep is proposed by Pacific Northwest Power Co., made up of four privately owned utilities. Nez Perce is backed by Washington Public Power Supply System, made up of about 40 public utility districts.



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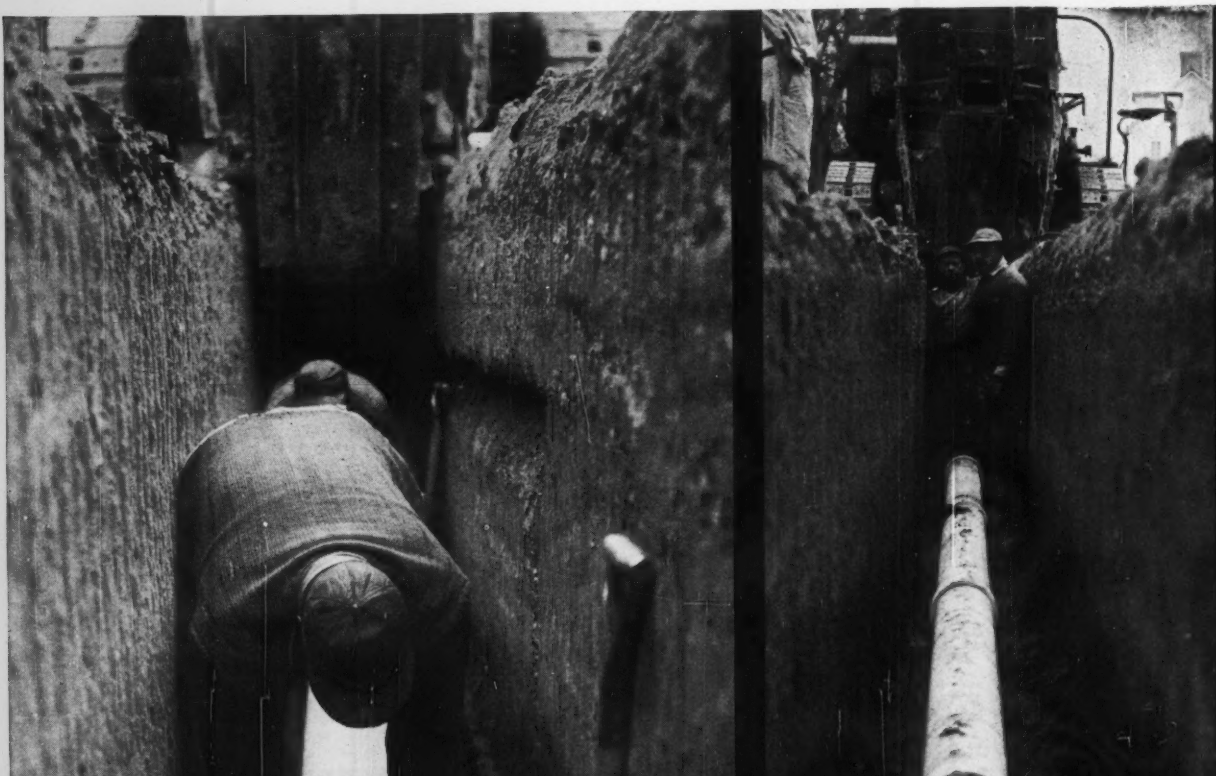
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ASBESTOS-CEMENT SEWER PIPE!"

says prominent Philadelphia area contractor

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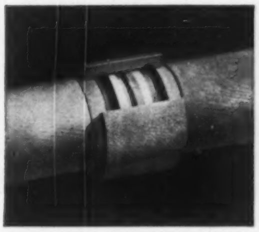
With the completion of the new sewer installation in New Jersey's thriving town of Marlton, Clyde Fear of Gray & Fear, contractors, had lots to say about "K&M" Asbestos-Cement Sewer Pipe. Here's what he told us. "You're money ahead with "K&M" Asbestos-Cement Sewer Pipe. Our men like the simple "K&M" couplings that slide in fast without any heavy machinery, and, believe us, that's one place where we save time and money. These simple coupling joints go miles faster. The pipe is easy to handle; there's less breakage on the job or in the storage yard. No lost time because of bad weather, either, because we can lay and couple this pipe in muddy trenches."

◀ "K&M" Asbestos-Cement Sewer Pipe installation, Marlton, N. J.; Engineers: Sherman, Taylor & Sleeper, Merchantville, N. J.; Contractor: Gray & Fear, Woodbury, New Jersey.

What Marlton, New Jersey, gained with "K&M" Asbestos-Cement Sewer Pipe, you can gain for your community, too. The pipe's smooth bore remains clean. This permits flatter grades . . . means fewer lift stations and lower pumping costs. It all adds up to less tax money for sewer installation and maintenance for your community.

Write today for more information on "K&M" Asbestos-Cement Sewer Pipe. Write to: *Keasbey & Mattison Company, Ambler, Pa., Dept. P-13100.*



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Keasbey & Mattison at Ambler

Pipe plants at Ambler, Pa.—St. Louis, Mo.—Santa Clara, Cal.

ASBESTOS-CEMENT SEWER & PRESSURE PIPE

Only 25 of 170 OK'd for Base Jobs

The Corps of Engineers has formed one of the construction industry's most exclusive groups with its new program of prequalifying bidders for ICBM base contracts.

Some 170 contractors applied for prequalification for the first three bases under the new system. Only 25 made the eligible bidders list.

The Corps of Engineers refuses to make public the names on its qualified list so far. Rejection for one contract, however, does not mean that a contractor is inelgible to apply to bid on subsequent jobs. Rejections are due in many cases to inadequate capacity for the job in question. Small and medium-sized firms applying for the list for the three big base jobs were advised, in many cases, to form joint ventures and try again on later projects.

A new Corps unit, the Ballistic Missile Construction Office, with headquarters in Los Angeles, decides which contractors are capable of building ICBM bases for the Air Force.

CEBMCO rejected 85% of the applicants for bidding on the three bases by the following criteria.

- Record of operations during past six years as indicated in qualification statement.
- Extent of current commitment that would affect financial resources or supervisory personnel available for proposed work.
- Quality of proposed management and technical personnel who would be assigned to the job, as indicated by resumes.
- Amount, type and condition of equipment that would be committed to the job with particular reference to specialized excavation and concreting equipment.
- Financial backing available and financial history.
- Record of proposed subcontractors. (A special pre-award type survey will be made of any subcontractors who would be given an important portion of the work.)

A contractor applying for a place on the qualified list risks rejection if:

- More than 70% of the value of work completed during the past three years plus present contracts was subcontracted.
- The proposed award, when added to work placement schedule of existing contracts, would require a per year work placement that would exceed the average per year placement accomplished during the past three years by more than 25%. (For joint ventures the combined volume of the members will be used in evaluation.)
- The contractor has been assessed liquidated damages or actual damages for late completion on 5% of either the number or value of the contracts during the past five years.
- Past experience of stated available supervisory officials shows unsatisfactory qualifications for the type of work to be performed.
- The contractor has required government financing, other than through monthly progress or partial payments or both.

Joint ventures are considered for qualification on the bidders' list. Smaller firms can furnish a composite statement of qualifications in advance of the closing date for a particular project. Otherwise, there is no way a small firm can become qualified for jobs beyond its individual capacity. Previously filed applications by member firms can be considered together.

Another way for joint ventures to be considered is for a qualified company to form a joint venture prior to bidding for a particular project.

The first three jobs under the prequalification program are Titan I bases at Davis-Monthan Air Force Base, Ariz., and McConnel AFB, Kan., and a Minuteman base at Malmstrom AFB, Mont.

First step for a contractor wanting to bid on ICBM projects is to get on the CEBMCO's mailing list. A letter to CEBMCO does this. Contractors then get a copy of the prequalification statement to fill out and return.

When a contract comes up and a contractor advises that he wishes to receive bid invitations, his statement is evaluated for qualification to the bidders' list.

The qualification procedure will apply to all prime contracts, which will range in value from $200,000 to several millions.

Gates Sees Union Leaders on Bases

Defense Secretary Thomas Gates said last week there are no current labor disputes delaying ICBM base construction. Further, he expects it to be on schedule by the first of the year.

Secretary Gates and other top defense officials met with nine labor leaders representing building trades and industry unions working on the missile bases. The meeting was a follow-up to the July 29 Pentagon conference with major ICBM construction and manufacturing contractors (ENR Aug. 4, p. 26).

Purpose of the meeting was to "establish relationships (with organized labor) so that we can enjoy a full degree of cooperation as the ICBM program develops." Secretary Gates said that "no particular segment"—labor, industry, or the military—was "responsible for the ICBM base program's troubles. We all share in the difficulties."

He stressed the program's urgency, said that only about one-tenth of the scheduled construction was already in place and that the bulk of the work is still to be done over the next four years.

He cited inadequate supervision of contractors and jurisdictional labor disputes as factors in the delay.

One Pentagon official described Mr. Gates's remarks as "similar to the pep talk he gave industry."

George Meany, AFL-CIO president, said jurisdictional disputes "are not created willfully," that they occur as "people are inevitably forced into competition to save their jobs through the evolution of a construction program from one type of work to another."

Mr. Meany also cited the need to shift higher-wage workers from urban centers to the lower-wage rural areas where ICBM bases are being built as another labor problem affecting ICBM bases.

Nicholas Zonarich, director of the AFL-CIO's Industrial Union Department, said the federation is "trying to work out machinery" between the building trades and the industrial unions to reduce jurisdictional problems.

The defense and union officials discussed creation of an educational program to give construction workers a fuller understanding of their work and to spread a sense of urgency.

Plans were also worked up to take labor leaders to the missile sites to get a first-hand view of the program.

Other union officials who attended the conference were Leonard Woodcock, vice president, United Auto Workers; Frank N. Hoffman, legislative director, United Steel Workers; Al Hayes, president, International Association of Machinists; C. L. Haggerty, president, AFL-CIO Building & Construction Trades Department; Gordon M. Freeman, president, International Brotherhood of Electrical Workers; Peter T. Schoemann, president, Plumbers and Pipe Fitters Union, and Joseph J. Delaney, president, International Union of Operating Engineers.

Bethlehem helps build the big ones in Philadelphia

Such as the Sheraton Hotel, where this huge steel truss and four others like it span the 70-ft-wide ballroom, and carry the weight of the 17 floors above.

Then there's the Transportation Building, 3 Penn Center Plaza, and other facilities in Philadelphia's handsome new Penn Center. Bethlehem supplied nearly 10,000 tons of fabricated structural steel for these buildings, over 2,200 tons of concrete reinforcing bars, miles of elevator rope, thousands of high-strength bolts, and many tons of open-web steel joists, steel pipe, galvanized sheets, and other kinds of steel.

Bethlehem helps build the big bridges, too. The Walt Whitman, the Penrose Avenue, the expressway bridges over the Schuylkill, and others—all were erected by Bethlehem bridgemen, using steel rolled in our mills and fabricated in our shops.

Within 100 miles of Philadelphia's City Hall, there are three large and growing Bethlehem steelmaking plants . . . including the nation's largest at Sparrows Point, Md. Also nearby are Bethlehem fabricating works and specialty plants. It's easy to see why Bethlehem stands ready to help Philadelphia "fashion its future to surpass its past."

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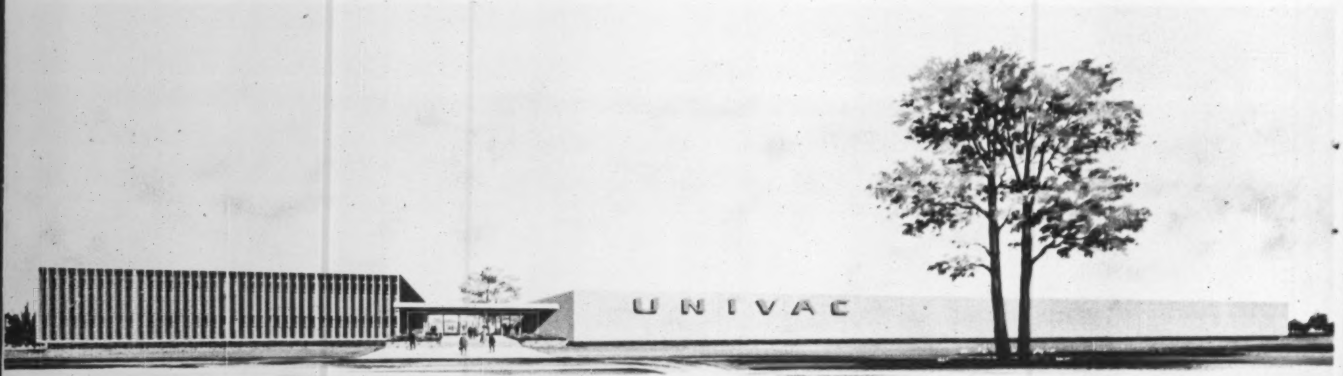
4 new industrial plants in the Delaware Valley

STEELWORK FABRICATED AND ERECTED BY BETHLEHEM



▲ **REMINGTON RAND DIVISION, SPERRY RAND CORPORATION**

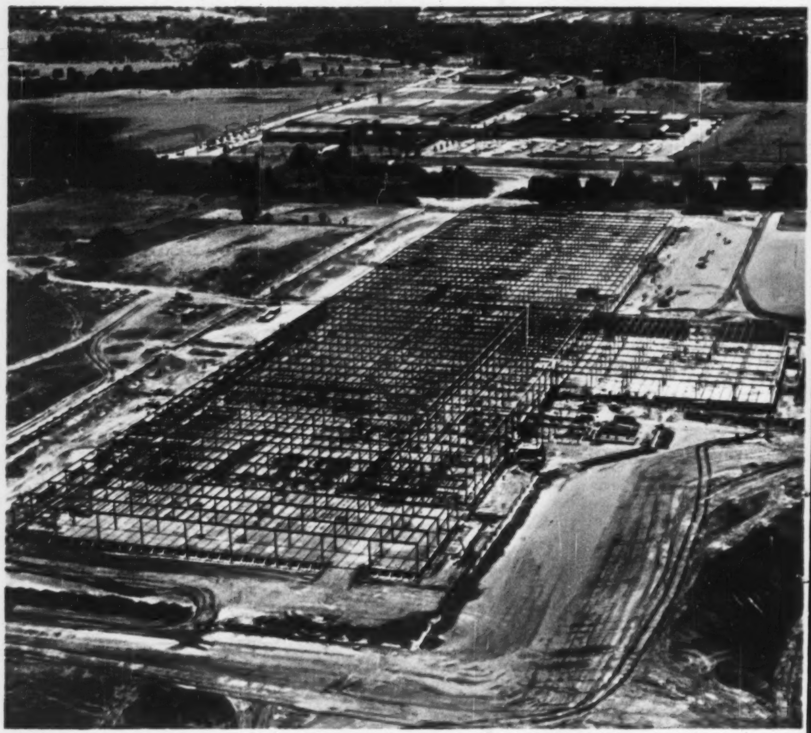
The pastoral atmosphere of suburban Blue Bell is the setting for this ultra-modern engineering center for sophisticated Univac machines.

The major structures are a two-story office building (120 by 270 ft) and a one-story engineering building (420 by 570 ft), connected by a glass-walled lobby measuring 50 by 70 ft. The entire facility is steel-framed, with shortspan and longspan joists. In fact, the economy of steel design was a major factor in determining the economic feasibility of the structure finally selected.

Both functional and handsome are the vertical louvers, 2 ft 6 in. on centers, on the south and west facades of the office building. Those on the south (front) side are operable, with automatic solar controls. The louvers help to minimize the air-conditioning load. The curtain walls have porcelain-enameled steel panels.

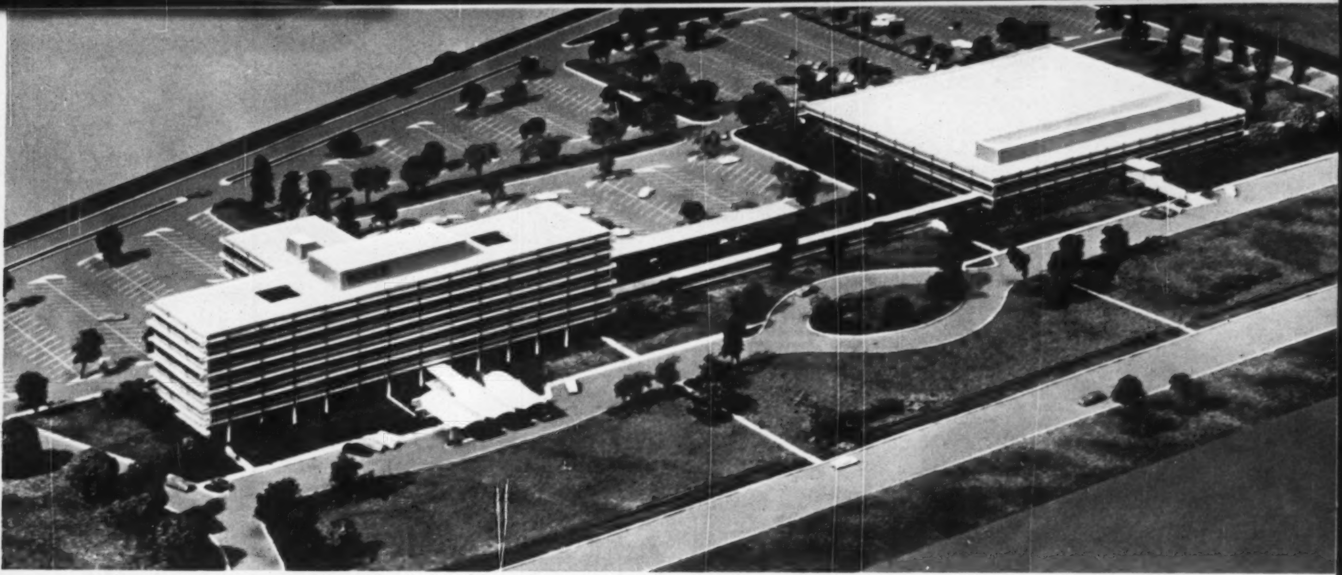
The center will be staffed by approximately 1,000 at the outset. The design provides for future expansion of both buildings to double the original size.

Owner: Remington Rand Division of Sperry Rand Corp.; architect and engineer: The Ballinger Company; general contractor: Wark & Company.



▲ **STEPHEN F. WHITMAN & SON, INC.** This famous manufacturer of nationally distributed confections is making construction news in a big way. Their new suburban plant, replacing old facilities in downtown Philadelphia, has a gross area of nearly 414,000 sq ft—and required only 1,080 tons of structural steel. The Bethlehem erection crew completed the field-bolted framing in nineteen working days. Fitting and bolting were finished five working days later.

Designer and builder: Barclay White & Company.



▲

SCOTT PAPER COMPANY The architect's model illustrates the finished appearance of Scott Paper Company's handsome executive offices and research and engineering center adjacent to the Philadelphia International Airport. Bethlehem has already completed the steelwork, and other contractors are aiming for an occupancy date early next year.

The main office building, six stories high, with a three-story south wing and full basement, comprises 225,000 sq ft. The research and engineering building contains another 150,000 sq ft on three levels, not including the penthouse.

Owner: Scott Paper Company; architects and engineers: Welton Becket & Associates; general contractor: Hughes-Foulkrod Company for the Office Building; Wigton-Abbott Corp. for the Research and Engineering Center.

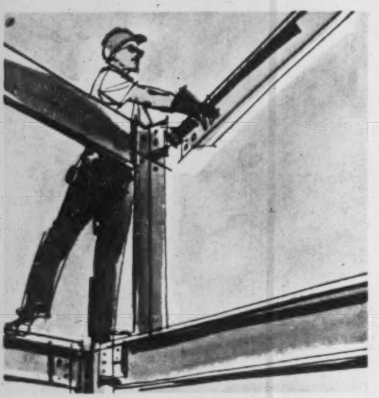
▲ **WYETH LABORATORIES** Another move to the suburbs—this one by a large pharmaceutical manufacturing concern. The new site, on a major highway near Malvern, provides space for two sprawling major buildings, ample parking area, plus adequate room for expansion.

The larger structure is a one-story warehouse, measuring 680 by 320 ft. Its beam-and-column frame carries nearly 1,000 longspan joists, in 40- and 60-ft lengths. The office and manufacturing building is 560 by 320 ft, with a large penthouse atop the office portion. All field connections are bolted. ▶

Owner: Wyeth Laboratories; general contractor: Geo. A Fuller Company (architecture and engineering was handled by the owner's plant engineering staff).

BETHLEHEM STEEL

BETHLEHEM STEEL



Structural Steel—*full range of standard and wide-flange shapes.*

Steel over the Schuylkill—*To help speed traffic, Bethlehem fabricated and erected 7,000 tons of steel for two bridges which stretch 2,000 ft over the river.* ▶

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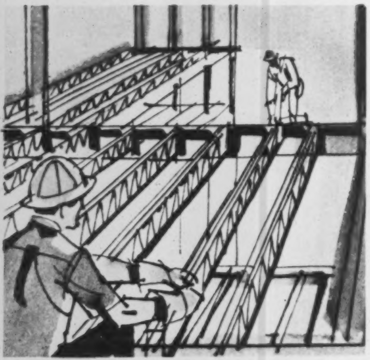
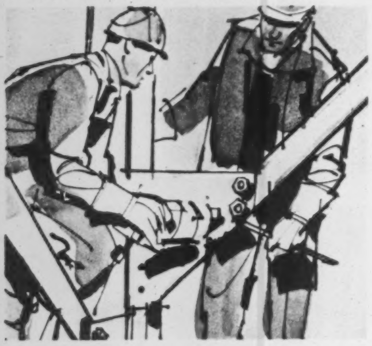
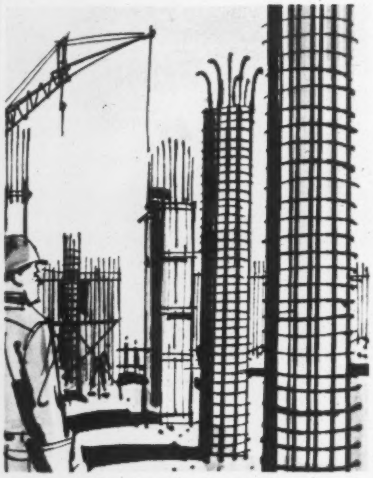


Open-Web Steel Joists—*shortspan and longspan types, and accessories*





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A special report by the editors of ENR

Focus: Philadelphia **Application:** Anywhere

Fitting Cities to the Future

More and more American cities, caught between the procrastination of the past and the growth of the present, are learning that urban decay is curable. Pioneering cities, like Pittsburgh, whose spectacular renaissance was described in an ENR Report (Nov. 19, 1959), command attention as examples of successful treatment.

Another pioneer in urban renewal is Philadelphia. Imaginative planning and bold action, following government reorganization in 1952, have given America's most historic city both a new look and a new outlook.

For some years Philadelphia has attracted city planners from all over the nation to study its recovery from the advanced stages of urban decrepitude. Now the city's bold planning overshadows its past achievements. Its Comprehensive Plan bases an ivory-tower vision on the solid rock of present financing policies. No other major metropolis has anchored the dreams of a twenty-first-century master plan so firmly to a practicable timetable.

Other phases of Philadelphia's program deserve study too. The city's nonprofit corporations, set up for specific projects, are proving successful catalysts in the urban renewal process. These quasi-public organizations shorten the link between public and private action, accelerating the whole rebuilding program. They have been notably successful in promoting industrial redevelopment.

Of particular interest is transportation, another field where Philadelphia's approach is unique. A program to revive the commuter railroads and reduce the swarms of automobiles jamming the downtown district is under way. It is administered by one of the city's nonprofit corporations.

In housing, public and private efforts in neighborhood conservation, backed by strong code enforcement, are stemming the spread of slums and making the new housing count.

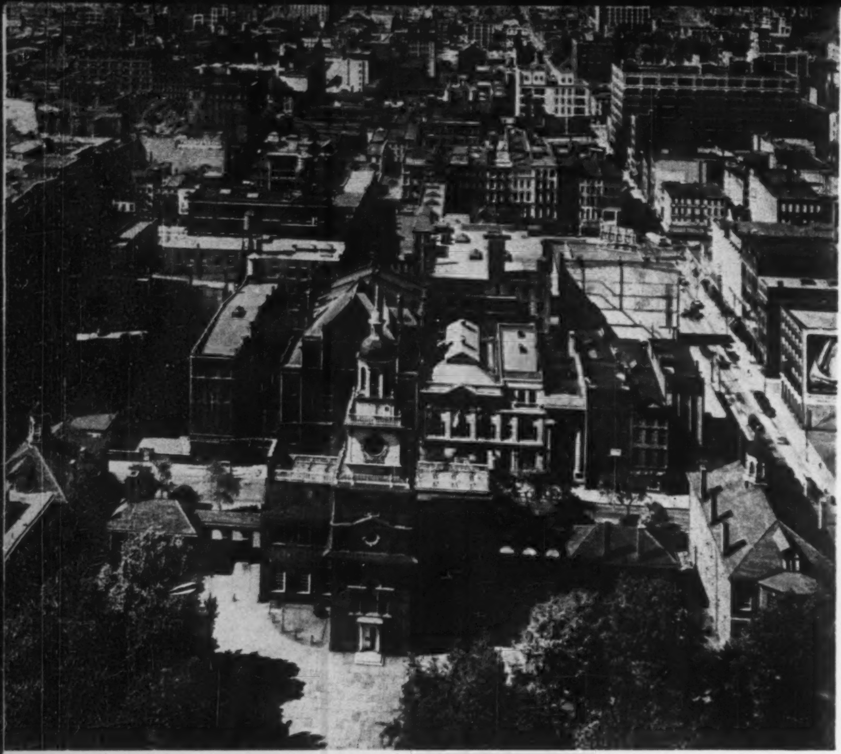
Philadelphia's citizens are carrying on a great civic enterprise to restore the city's unique advantages as an accessible center for commerce and culture and a slum-free home for people and industry. And the Philadelphia story might be any city's story.

SPECIAL FEATURES

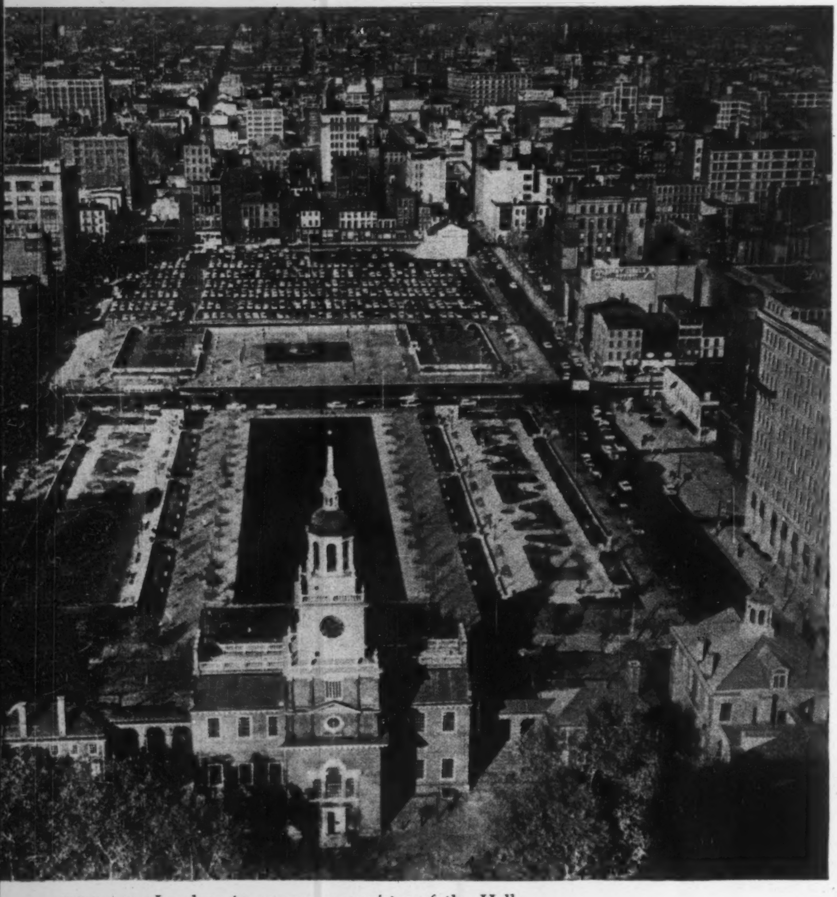
Philadelphia Rebuilds to a 21st Century Plan p. 41

Mobilizing the City's Resources for Redevelopment p. 52

Pioneering in Precast Concrete p. 56



1952: Independence Hall was lost in the surrounding slums.



TODAY: Landscaping opens news vistas of the Hall

Philadelphia

After a decade of tremendous progress in rebuilding their city, Philadelphians can hardly take time for a backward look of admiration. A recent report by the City Planning Commission swings their attention to the threshold of the twenty-first century, when slums and traffic jams should be mere bad memories.

And judged by the civic enthusiasm that greeted the report, Philadelphia has fully recovered from its long siege of sleeping sickness. The old town of William Penn and Ben Franklin had degenerated from the "cradle of liberty" into what one cynical citizen called a "hotbed of inertia." But once again, the Quaker City is a source of ideas instead of a butt for jokes.

The unique feature of the Planning Commission's Report—known officially as the Comprehensive Plan or Physical Development Plan of the city—is its realistic proposal for financing projects. **Philadelphia's is the first master plan of any major city to provide for long-range financing within the limits of present fiscal policy.** Specifically, the Comprehensive Plan extends Philadelphia's 1960-65 capital program indefinitely into the future, with a flexible timetable that sets upper and lower limits to attainment of the Plan's goals.

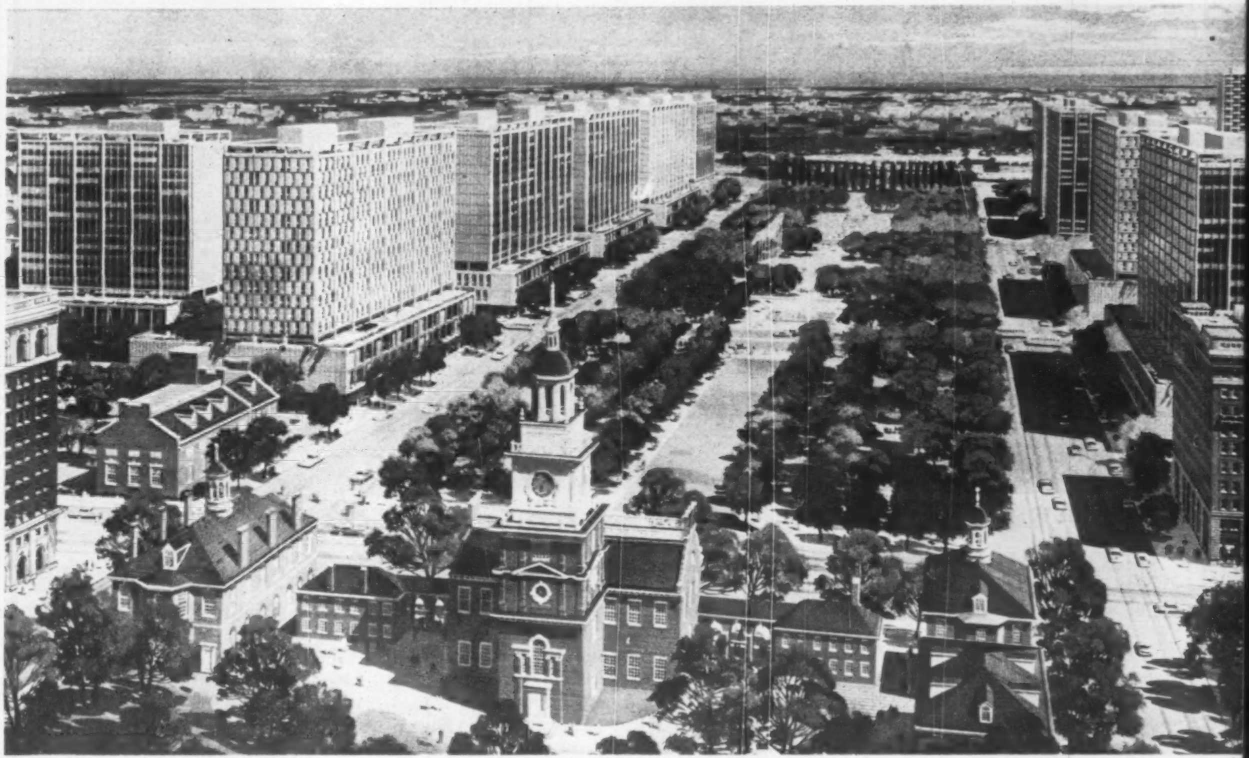
Tax-supported city financing is the key element in this timetable. It sets the pace of the capital programming, both for projects financed wholly by the city and those financed jointly with the state or federal government. At the current $25-million annual rate of city expenditure, the plan would take nearly 40 years to complete; at predicted economic growth rates it would take about 30 years; and a really optimistic guess cuts the time to 20 years.

Federal and state funds would make up about half the $3.5-billion cost of the Comprehensive Plan. City tax revenues will furnish $920 million; self-supporting city projects and the board of education make up the $840-million balance. And basing their estimate on past experience, Philadelphia's planners believe that the $3.5-billion public "seed money" will stimulate at least $9 billion in private investment.

This sanguine outlook about the city's future springs directly from the high-powered program of the past decade. Since 1952, when a reform

Fitting Cities to the Future:

Rebuilds to a 21st Century Plan



THE FUTURE: Independence Mall will be flanked by headquarters buildings of top U. S. companies.

administration came in as part of a movement that had already given the city a new home-rule charter, over $2 billion in public and private funds has been spent in rebuilding the city. The successful redevelopment projects of the Fifties set the pattern for the city's long-range plans and rekindled faith in its future.

The Road From Glory

Founded by William Penn nearly 300 years ago, Philadelphia assumed paramount importance as a colonial and early American center for commerce, industry and culture. The second largest city in the English-speaking world in the mid-eighteenth century, it reigned as the metropolis of the North American continent until the early nineteenth century.

Until 1854 the city contained an area of about 2 sq mi, though urban expansion even then had spilled over the political boundaries. Known today as Center City, the early Philadelphia was a compact, roughly rectangular area, bounded by the Delaware River on the east and the Schuylkill River on the west. Broad St. and Market St., intersecting at City Hall Square, formed the city's north-south and east-west axes respectively. These major thoroughfares still mark the city's axes today, though the city has spread far to the north, west and south. The Delaware River, with New Jersey and Philadelphia's neighboring city of Camden on the opposite shore, blocked eastward expansion.

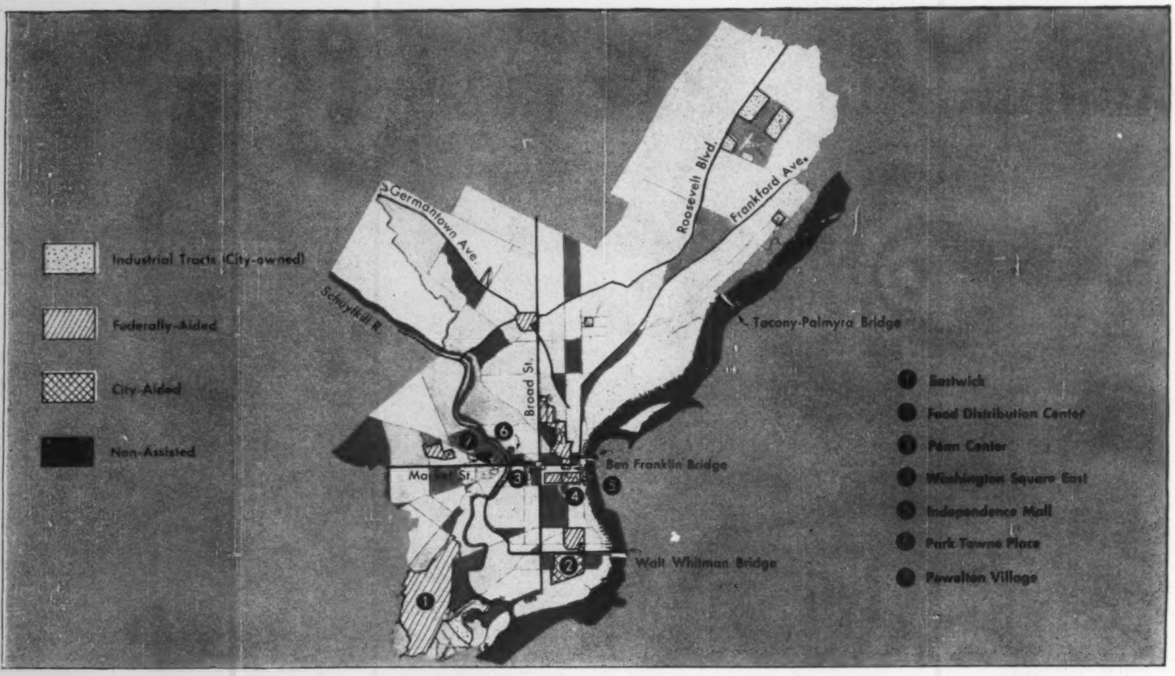
Like the vast majority of cities, Philadelphia followed no orderly plan in its growth; it just grew. Rapid expansion following the Centennial Exposition in 1876 continued well into the twentieth century. By 1945 the city had spread over most of the 134 sq mi within its present boundaries, leaving vast areas of "urban sprawl."

A bright spot in the dismal decade of the Thirties was the Philadelphia Savings Fund Society building, a 33-story tower that still tops everything in town except Penn's statue atop City Hall. Completed in 1932, the $8-million PSFS building—with story-high trusses over the column-free banking area and cantilevered floor girders—still stands as an outstanding example of modern architecture and structural engineering (ENR Nov. 10, 1932, p. 551).

Subway construction, begun shortly after the turn of the century, modernized Philadelphia's public transit system. The east-west Market St. line was completed in 1908. Its connecting link to the northeast section, the Frankford Elevated, followed in the early Twenties. The Broad St. subway, built during the late Twenties and extended in the Thirties completed the basic network. And the Benjamin Franklin Bridge, a suspension span carrying eight lanes of auto traffic and rails for subway cars, has linked Philadelphia and Camden since 1926.

But at least one piece of poor planning marked these efforts. The Arch St. Subway, planned as part of a downtown subway loop before World War I,

. . . Future metropolis takes shape



PROJECTS UNDER WAY show balance in Philadelphia's urban renewal program.

was abandoned after $1 million had been squandered building two short unconnected segments, which have remained sealed ever since.

Philadelphia's apathetic municipal government, slumbering through a 67-year encampment in City Hall, didn't even expend the effort of bad planning on most of the city's problems; it just ignored them. The city's housing rapidly deteriorated during World War II and the early post-war years as the economic boom attracted low-income groups. The more prosperous families had long since deserted the once-stately residences in the older sections. They were followed by middle class people in the flight to the suburbs. Conversion of one-family homes into bulging six-family tenements then became the pattern.

Reform and Recovery

Finally in the late 1940's, when slums and all the attendant evils of overcrowding and congestion seemed destined to engulf the city, exasperated civic leaders banded together in the Greater Philadelphia Movement. This organization was largely responsible for rallying public support for reforms that have turned the city toward recovery.

Here are the major programs and projects that are revitalizing Philadelphia:

- Penn Center, a nearly completed development containing well-spaced office buildings, a hotel and an apartment tower in a mile-long strip west of City Hall, has been invigorating the downtown area since its first new building was completed in 1955.
- The $26-million Independence Mall Project, arising from a nearly completed restoration and landscaping project around Independence Hall, has entered the initial planning stages for major commercial redevelopment.
- Washington Square East, a $55-million project, will carry residential redevelopment eastward from Independence Hall to a recreation area planned for the Delaware waterfront.
- Private and public housing and conservation programs have made a good start in solving the city's housing problems.
- Joint action by the city government and the railroads is reviving the commuter lines.
- New expressways and the Walt Whitman Bridge are facilitating automobile travel through the city and into neighboring New Jersey.
- Non-profit corporations set up for specific projects and programs are supplanting blights like the old Dock St. Market with modern facilities.
- Commissioner Sam Baxter's dynamic waterworks program, climaxed by the $25-million push-button purification plant completed last year at Torresdale (ENR Sept. 19, 1957, p. 37), has silenced the wisecracks about "Schuylkill Cocktails" and other joking references to Philadelphia's water supply.

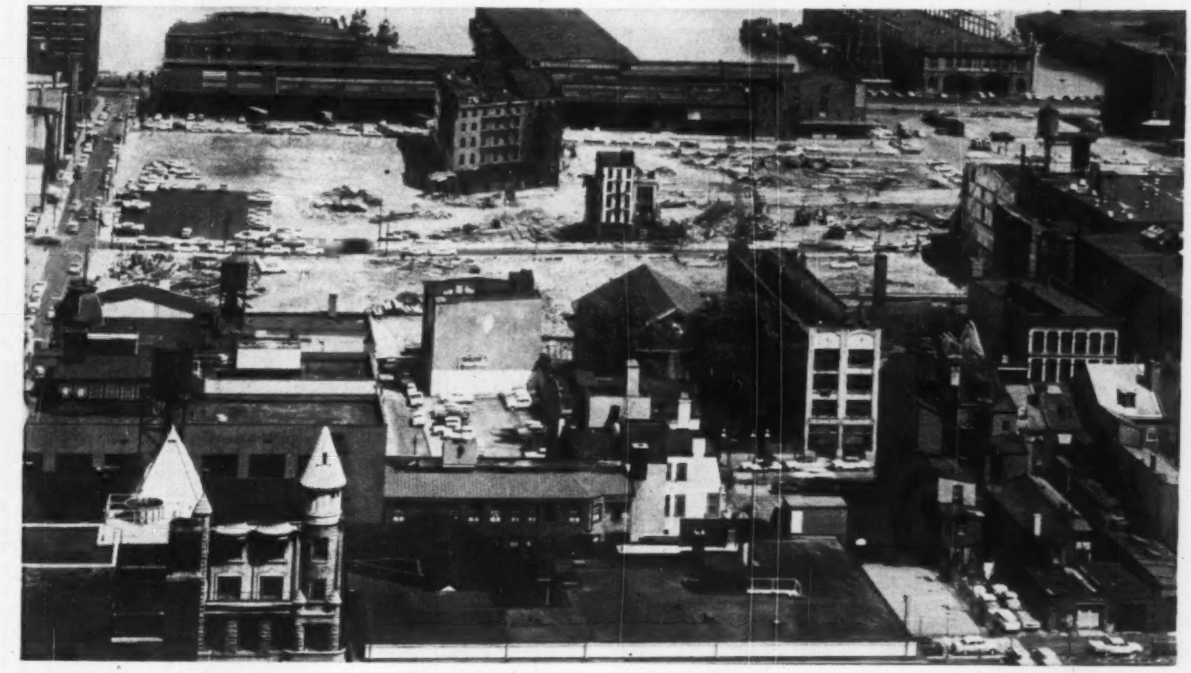
Signposts to the Future

The Comprehensive Plan does not purport to be a detailed blueprint for the future. It is a guide for fitting individual projects into an over-all city modernization program. The goal is harmony among industrial, commercial and residential development, with rapid, easy transit between them to replace the chaos of haphazard growth, decaying slums and crowded streets. For Philadelphia planners have learned this lesson: The economic health of a city and the physical and mental health of its people demand smoother functioning of our antiquated urban mechanisms.

Here's what the City Planning Commission foresees by 1980:

- A relatively stable city population of 2.25 million in a proliferating metropolitan area, whose population will grow from four to six million. Philadelphia's future citizens will settle more extensively and less densely throughout the city's 134 sq mi.
- A more spacious, greener, downtown area featuring pedestrian esplanades and parking facilities on an expressway loop that will define the Center City area.
- An integrated public transit system, with expanded and modernized subway and commuter rail service linked with outlying bus service and parking facilities.
- Expressways providing automobile

. . . Historic residential area will be rebuilt



DEMOLITION OF OLD MARKETS precedes rebuilding of historic Society Hill.

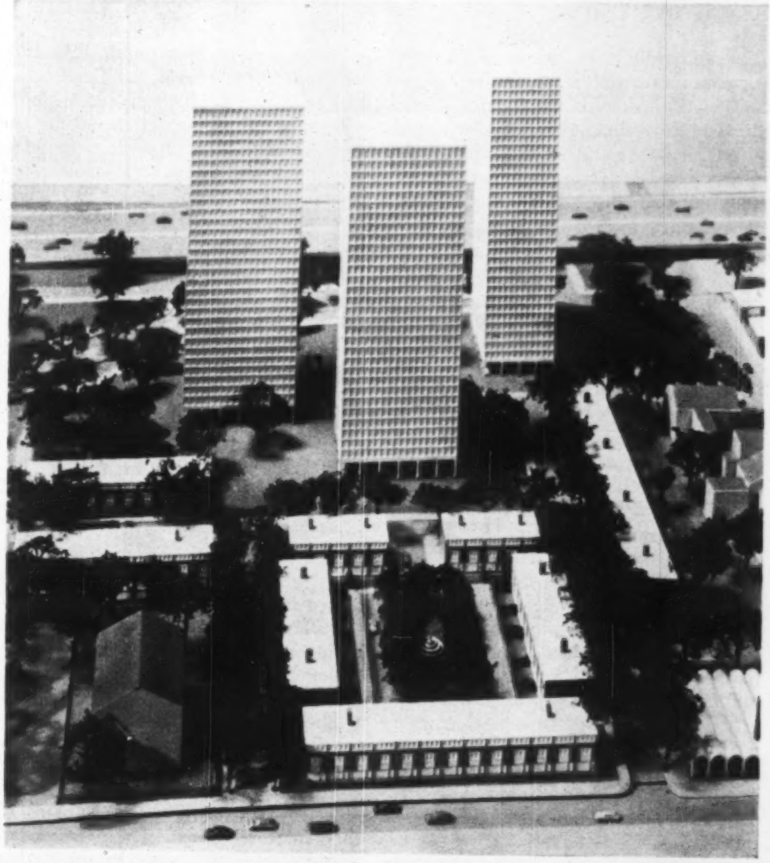
travel around and through the city.

- Industrial parks isolated from residential and commercial areas by greenbelts.

The dominant trend in Philadelphia's economy is the growth in non-manufacturing categories—finance, insurance, the professions, etc., accompanied by lagging growth in manufacturing. Some of this increased demand for business and professional services will accompany rising population. But most of it will come from Philadelphia's growing role as a headquarters center for national corporations, a function that the city is expected to share with New York in increasing measure.

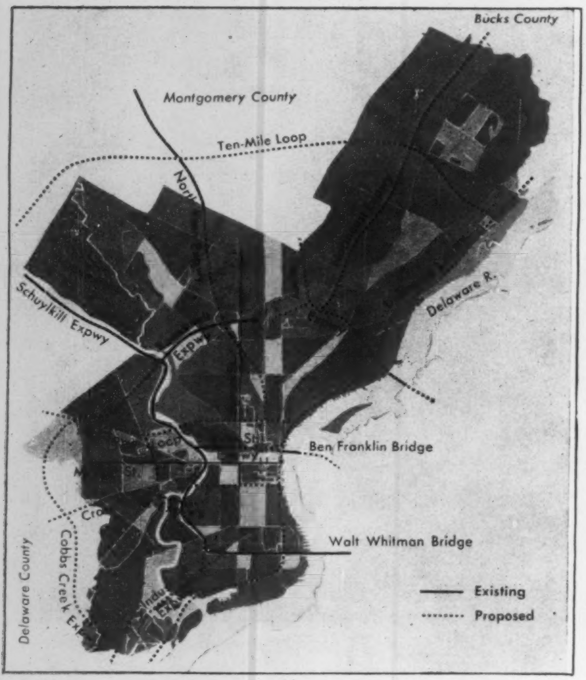
Philadelphia's renaissance is influencing business decisions that will shape the city's economic future. An example: the recent decision by the Bell Telephone Co. of Pa. to build a $14.5-million, 18-story headquarters building in Center City. Bell chose to consolidate its scattered personnel in a downtown skyscraper instead of following the migration to the suburbs because of Philadelphia's ". . . startling transformation from darkness and dinginesss to brightness and beauty," in the words of president W. D. Gillen. And the sleek Bell tower, designed by Philadelphia architect Maurice Fletcher, with its stainless steel curtain walls and bronze-sheathed exterior columns, will contribute much to this picture of brightness and beauty.

The economic importance of Center



APARTMENT TOWERS will occupy the old market site.

. . . Goal for Commuters: More rail transit


Bucks County
Montgomery County
Ten-Mile Loop
North
Schuylkill Expwy
Expwy
Delaware R.
Loop
St.
Ben Franklin Bridge
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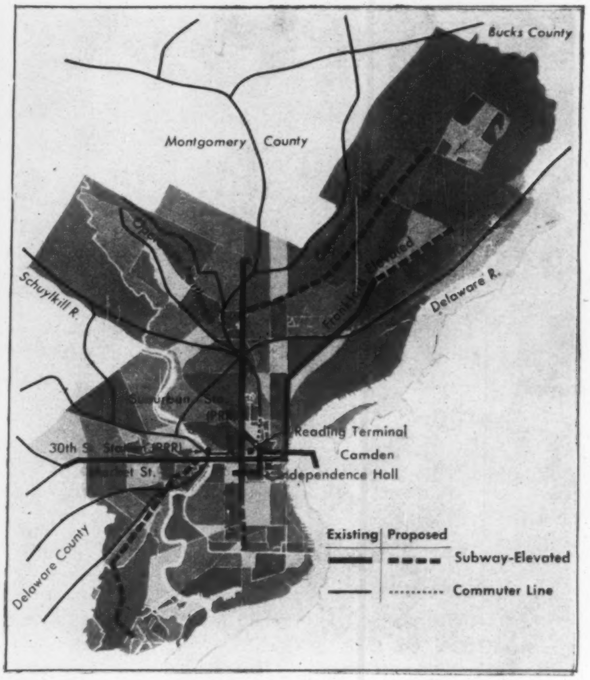
Walt Whitman Bridge
Delaware County
Existing
Proposed

EXPRESSWAY SYSTEM: Loops and radials.


Bucks County
Montgomery County
Schuylkill R.
Frankford Elevated
Delaware R.
Suburban Sta. (PRR)
Reading Terminal
30th St. Station (PRR)
Camden
Market St.
Independence Hall
Delaware County
Existing
Proposed
Subway-Elevated
Commuter Line

RAIL TRANSIT is making a comeback.

City can hardly be exaggerated. Though it encompasses only 2 sq mi—less than 1/60 of Philadelphia's total area—Center City furnishes 41% of the city's output of goods and services and 39% of its jobs. It provides one-third as many jobs as the entire eight-county Philadelphia metropolitan region surrounding it.

Rail Transit for Commuters

Indispensable to the optimistic economic predictions for the metropolitan area, and in particular to Center City, is improved transportation. And Philadelphia's transportation planners are convinced that expressways alone can't solve their problems.

Transporting the bulk of Philadelphia's commuters into Center City by automobile would be fantastically expensive. Mayor Richardson Dilworth recently pointed out that the Delaware Expressway, which will carry less than 10% as many people as the city's mass transit system, will cost nearly $300 million. This is almost double the mayor's estimate of the city's total cost of buying out the Philadelphia Transportation Co., expanding the subway system, and modernizing and integrating the commuter rails with other public transit.

Not only in cost but in land requirements, mass transit shows tremendous advantages over automobile commuting. One rapid transit track can transport as many as 40,000 people per hour past a given point. Transporting the same number of automobile passengers, at normal occupancy of 1.5 passengers per car, would require some 19 freeway lanes occupying at least 10 times as much land as the transit tracks.

Because land for multi-lane freeways is exceedingly scarce in central Philadelphia, the Urban Traffic and Transportation Board hopes to increase rail transit patronage from its present level of 60% of all downtown travellers to 70% by 1980. An excellent, underpatronized commuter rail system appeared as the first means of increasing transit ridership. And several experiments, already tried and proven, point the way.

The city's first experiment in its program to promote better use of the commuter rails was "Operation Northwest". Object: to find out if lower fares and better schedules would induce drivers to leave their cars home and ride the trains.

Both the Pennsylvania Railroad and the Reading Co. entered into an agreement with the city, which appropriated $320,000 for a 12-month period in 1957-58 to reimburse the railroads for their increased costs. The two railroads added a total of 22 daily trains to their schedules, an increase of nearly 50% in service. They also cut fares from an average of about 50 cents to a straight 30 cents. Transfer privileges were extended to buses and trolleys intersecting eight rail stations, and a 40-cent combined fare was established.

The experiment was a success: good service and reduced fares can induce motorists to desert their cars. Within one year, patronage rose 36%.

Moreover, the city's subsidy for each passenger on Operation Northwest is far less than the estimated subsidy for each automobile passenger would be if there were no rail commuter service. John A. Bailey, UTTB's executive director, estimates that additional freeway capacity for each regularly-commuting automobile would cost the city an addition $150. (This estimate also includes the cost of traffic control devices and police services.) At the average rate of 1.5 passengers per car, this would mean an annual city subsidy of $100 per passenger, whereas the annual subsidy for a regular commuter on Operation Northwest has been only $32.

Operation Northeast put the principles of Operation Northwest into practice on an 11-mile stretch of Reading Co. track. Unlike its counterpart, Operation Northeast had no competition from a nearby expressway. The revised train schedule halved travel time to Center City by public transit or

. . . Less Center City traffic congestion

VINE ST. EXPRESSWAY will eventually link with Ben Franklin Bridge.

automobile. And, as the planners predicted, Operation Northeast scored a spectacular success. By February, 1960, the revitalized line was carrying 260% more passengers than it had carried during the previous February.

Spurred by the success of the two "operations," the city worked out a more comprehensive plan to improve rail commuting. Last winter it formed the Passenger Service Improvement Corp. of Philadelphia, a non-profit organization comprising the city government, the two railroads and 23 railway unions.

PSCIP will undertake a large-scale modernization program for commuter railroads. Specific goals of the city-subsidized program:

- Electrification of all rail lines within the city.
- Station relocation, modernization.
- Expansion of station parking facilities.
- Stabilization of commuter fares.
- Improvement of transit cars.

The pace of this $30-million program will depend on the availability of federal and state aid. The city will have only about $14 million available for financing this program during the next three years.

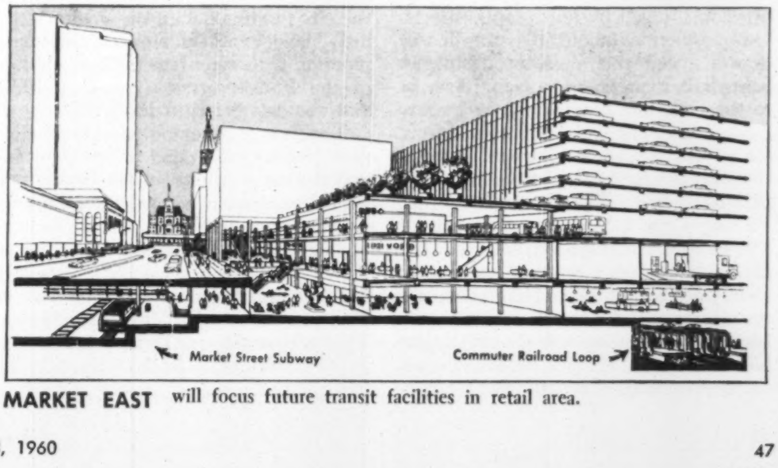
As part of a regional transportation program, now under intensive survey by the Penn-Jersey Transportation Study, the city hopes to extend the scope and membership of PSICP into the suburbs. For a two-month trial period starting October 31, Philadelphia will finance subsidized commuter rail service for three communities in neighboring Montgomery County. City officials hope that the experiment will induce these and other suburban communities to join PSICP.

The PSICP will eventually assume the functions of the UTTB (Urban Traffic and Transportation Board) in planning rail transportation in the Philadelphia metropolitan area.

Some of PSICP's more important long-range goals for public transit:

- Integration of Pennsylvania Railroad and Reading Co. lines within the city into a single system. (This plan features a Center-City rail connection, part of the Market East project discussed later.)
- City acquisition of the Philadelphia Transportation Co. system, when its present lease expires in 1962. (The PTC presently operates $222-million worth of city-owned transit facilities.)
- Extension of the subway system and replacement of the elevated lines by underground.

The improvement program for the subways is by no means limited to the future. The first major improvement, completed in 1955, was removal of a 1.6-mile stretch of obstructive elevated rail structure from 30th St. Station westward to 46th St. The Market St.



MARKET EAST will focus future transit facilities in retail area.

. . . Penn Center showed imaginative planning

surface trolley was also moved underground, affording a saving of 12 minutes per trip to its riders. And the creation of the wide new Market St. boulevard above the subway has breathed new life into the formerly sunless steel-framed canyon, forever rumbling and rattling with the passage of el trains and surface trolleys.

The Comprehensive Plan calls for an additional 10 miles of subway and six miles of underground trolley to expand the existing system (see map). Total cost of these extensions is estimated at $150 million. And the remaining eight miles of elevated track—2½ miles at the west end of Market St. and 5½ miles on the Frankford line—will be put underground.

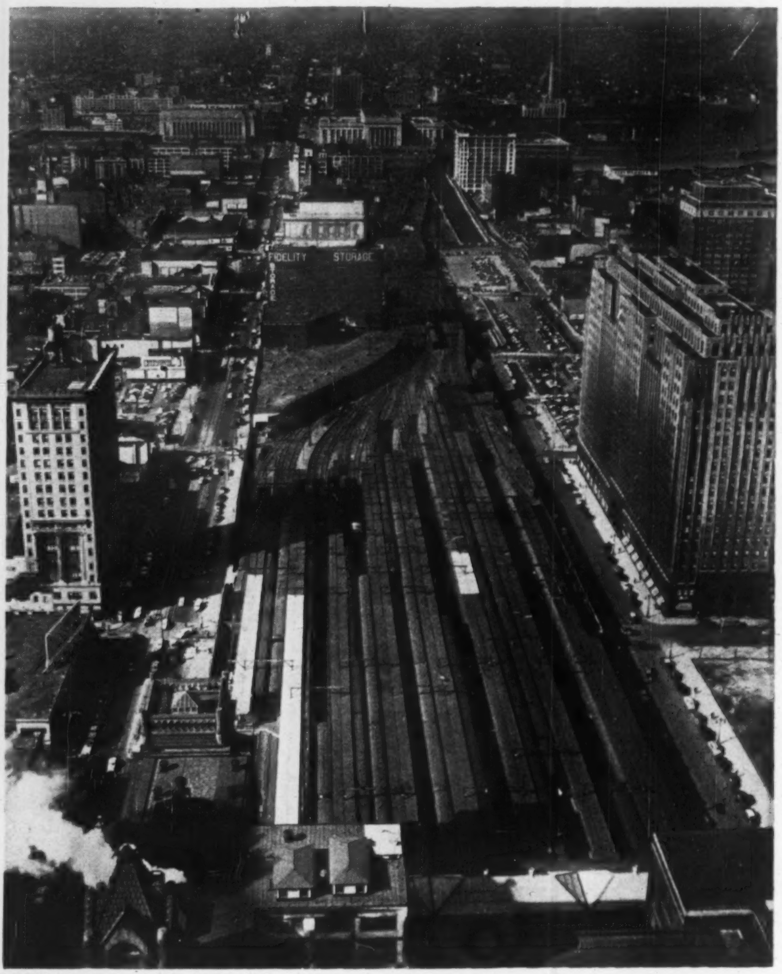
More Expressways, Too

Supplementing the mass transit system for the commuters is Philadelphia's expressway-building program for everybody. Thus far, the city and the state highway department have built 14 miles in a system eventually planned to contain over 100 miles of expressway within the city limits. Several major highways in this system are Interstate routes and thus qualify for Federal grants. Total cost of construction completed so far: $87 million; city's share, $16 million.

The basic expressway pattern envisaged by the Comprehensive Plan consists of radial routes fanning out from four loops at varying distances from the central business district (see map). The two major radials in the system are the Schuylkill Expressway, now completed, and the Delaware Expressway, scheduled to go under construction within the city limits late this year. These two freeways form the western and eastern boundaries, respectively, of the Center City Loop.

The northern boundary of this loop —the two-mile Vine St. Expressway—is half completed. It is an open-cut depression bridged by north-south streets. On completion (about 10 years hence) it will speed cars non-stop from the Schuylkill Expressway to New Jersey or to the Delaware Expressway.

The southern boundary, the future Crosstown Expressway, would provide the only access to Center City's major parking facility—The South Broad St. Parking Terminal. Taking advantage of the existing Broad St. concourse, the Planning Commission proposes southward extension of the concourse to meet the depressed freeway. Extending three blocks northward toward City Hall, one block each side of the Broad St. concourse would also be depressed for two-level parking structures below street level.



1952: **"Chinese Wall" traced an ugly path through Center City.**

The Schuylkill Expressway was Philadelphia's first. Branching from the Pennsylvania Turnpike about 15 miles northwest of Center City, it follows the Schuylkill River through the heart of the city to link up with the Walt Whitman Bridge, Philadelphia's southern junction with New Jersey. Construction of the 23-mile artery started in 1952 and was completed in 1959.

The key to opening more Philadelphia locations to rapid automobile access than any other route in the system is the expressway along the Delaware River. Nearly half of the 43-mile length of the Delaware Expressway lies within the city. A wide band of old streets and buildings must be demolished, and some 200 industries will have to relocate. This will make the Delaware Expressway Philadelphia's most costly one, by far.

One other road currently under construction is the Roosevelt Expressway, which swings to the northeast from its junction with the Schuylkill Expressway about five miles northeast of Center City. It forms the first link in the so-called Five-Mile Loop. Building this roadway under the Broad St. subway tunnel was a notable feat (ENR, July 14, p. 42). It should be opened late this year.

The expressway system is designed with its limitations in full view. The Center City Loop can't possibly accommodate all the vehicular traffic foreseen in the downtown district. Thus the need arises for the outer loops to intercept some radials before they converge on the Center City Loop and choke it with vehicles.

Even with traffic somewhat limited by this design, there will be times when other means of control will be required to prevent traffic jams. One proposal

. . . and what bold leadership could accomplish

TODAY: Penn Center towers rise from site of old blight.

of the planners is for an electronic system that will automatically count vehicles, predict jams and close entrances.

Also included in the highway program are 400 miles of arterials, most of which already exist in the form of major streets and boulevards. Some of these arterials would restrict automobile and truck traffic to favor public transit.

Opening Up Center City

Center City, the commuters' destination, gets extensive redevelopment to reduce congestion, modernize buildings, restore historic buildings, and generally to add space and greenery. The Penn Center, Independence Mall and Washington Square East projects are already accomplishing these ends. Washington Square West and Market East, recent proposals of the Planning Commission, would extend redevelopment almost over the entire downtown area.

Boldest part of the downtown redevelopment plan is Market East. It covers a six-block strip east of City Hall, where Philadelphia's major retail stores are concentrated. At rush-hours, cars and buses crawl along Market St., slowed by swarms of pedestrians forever caught between traffic light changes.

Market East is planned to end this chaos. A new bus terminal will remove all the New Jersey commuter buses from Market St.; parking garages serving the peripheral expressways will eliminate much of the auto traffic; and a three-level shopping mall with underground and overhead bridge crossings will separate most of the pedestrians from wheeled traffic.

Market East will also incorporate the eastern station of the proposed underground commuter railroad connection between the Pennsylvania Suburban and Reading railroad stations, which are a half-mile apart.

An underground pedestrian concourse, continued from the existing Penn Center concourse west of City Hall, will extend eastward to Independence Mall, a distance of about a mile. This concourse will have open garden courts adjoining enlarged subway stations. Three other open pedestrian levels, connected by moving stairs, will provide access to stores, garages and the bus terminal, which will be located above the commuter trains.

Pedestrians will also win a major victory on Chestnut St. Like Market St., one block north, this one-way street is now a battleground for pedestrians, autos, and buses. In the future, however, Chestnut St. will have no auto traffic for a two-mile stretch between the Schuylkill and Delaware Rivers, if the planners have their way. Sidewalks will be widened, and trolleys will run between parking garages located near the Expressway Loop. City planners hope to lure sightseers at Independence Hall into riding picturesque open-air trolleys through the colorful Chestnut St. shopping area.

Two projects that originally sparked downtown redevelopment are Penn Center and Independence Mall.

The Independence Mall project grew out of federal and state programs initiated in the late Forties to demolish old warehouses and factories that blighted the Independence Hall neighborhood, to restore the many historic buildings there and to landscape the area. Liberalized provisions for nonresidential urban renewal funds, passed by Congress in 1959, made Independence Mall eligible for federal assistance.

The scope of Independence Mall redevelopment has expanded to include the flophouses, bars and sagging businesses of the skid row district. And the rebuilding of this run-down section is getting an auspicious start with construction of the new Police Administration Building (see p. 56).

Long-range plans for Independence Mall call for good use of the land flanking the three-block-long prestige greenway. The Old Philadelphia Development Corp., a non-profit citizens' group concerned with the redevelopment of the eastern half of Center City, is promoting Independence Mall as a site for headquarters buildings for national corporations and insurance companies. The state has completed demolition for the mall and about half the landscaping.

Landscaping and restoration work in the Independence Hall area stimulated the plan to rebuild a large adjacent area to the south known as Washington Square East. It encompasses an historic section known as Society Hill, be-

. . . City's wholesale food industry

lieved to contain more early American buildings than any other city. Redevelopment will restore Society Hill to its original residential character with a community of renovated colonial homes, new town houses and apartments. Thus redevelopment here has many facets, ranging from home owners' do-it-yourself renovation projects to construction of apartment skyscrapers.

For months, Society Hill has presented a scene of bustling activity. Some workmen are chipping off stucco and pointing up old brick while others carry on bigger demolition projects. Meanwhile the Redevelopment Authority is still acquiring commercial and industrial properties that have sprung up and blighted the area over the past century or so.

To assure the highest standards of architect design and community planning for Washington Square East, the Redevlopment Authority held a competition among developers. A notable feature of this competition was the Authority's requirement that at least 1% of the $55-million estimated cost go into sculpture, paintings, fountains and other fine arts.

After long deliberation, the judges chose the plan of I. M. Pei & Associates, New York City architects, submitted with the proposal of New York City realtors Webb & Knapp, Inc., for rebuilding the eastern sector of Washington Square East. The Authority awarded a contract to the Thomas Jefferson Square Corp., also of New York City, for rebuilding the western sector, but under a condition of redesign. The corporation subsequently retained the Pei firm as its architects also.

Pei's plan features three monumental apartment towers in the eastern sector and two more in the western sector. Exposed mullions and spandrel beams will give these buildings an unusual architectural appearance and structural system. Spaced at less than 6 ft c-c, the mullions will double as exterior columns and form part of the wind-resisting bents for the 30-story structures. Floor framing is flat-plate construction.

The eastern-sector towers will occupy the old Dock St. Market site where demolition had to await last year's removal of the wholesale produce and seafood merchants to the new Food Distribution Center.

General contractors for the eastern and western sectors are, respectively, McCloskey & Co. of Philadelphia and George A. Fuller Co. of New York City. Construction is scheduled to start early next year.

CHAOS reigned in the crowded Dock St. Market.

The first major construction in Washington Square East will soon start with the 33-story, $11-million Hopkinson House Apartments, designed by Philadelphia architects Stonorov and Haws. This is the only major project in Washington Square East not included in the two major redevelopment contracts.

Penn Center, a joint venture of the city and the Pennsylvania Railroad, first showed Philadelphians what imaginative planning, bold leadership and perseverance could accomplish. Penn Center was formerly the site of the so-called "Chinese Wall," a masonry viaduct that carried the Pennsylvania's tracks from 30th St. Station to the old Broad St. Station across the street from City Hall.

The landscaped esplanades of Penn Center contrast sharply with the architectural canyons in the main office area to the south. A pedestrian concourse, one story below street level, contains shops and a skating rink converted into an open-air restaurant in summer. A subway station garden, like those planned for Market on the opposite side of City Hall, will be built just west of City Hall.

On the mile-long Penn Center strip, which stretches from City Hall westward to 30th St. Station, there remains only one building built before the start of redevelopment: the Pennsylvania Railroad's Suburban Station. New construction completed includes two 20-story office towers, a 1,000-room hotel and a transportation center comprising an 18-story office tower, a four-level parking garage and a bus terminal. A 20-story apartment house is nearing completion, and several others are planned as reconstruction proceeds westward.

The Plan for Better Housing

Philadelphia's biggest renewal problem is housing. Despite improvements recorded in the period 1950-56, the city still contained 21,000 dwelling units classified as "dilapidated" and nearly 30,000 units with no private toilet or bath (as of 1956). Over 80% of the city's homes were built before 1930, whereas less than 50% of the surrounding suburban housing falls into this category.

To make Philadelphia's future residential communities more livable, and thus more attractive to higher income groups, the planners propose a 25% increase in total residential area and a reduction in average population density from 29 to 25 units per acre. Most of this additional area will come from vacant land, chiefly in the big expanses of the far northeast section. Development of this vacant land will more than offset the 5 sq mi of densely-populated slums scheduled for redevelopment for other uses.

The Comprehensive Plan proposes to restore the closely-knit urban community life fragmented by the advent of the automobile. Residential areas will be organized into three kinds of units: neighborhood, community and district. Schools, recreation centers, playgrounds and small stores will be located within a radius of a few blocks of the neighborhoods' residents. A community, comprising several neighborhoods, will contain a branch library,

. . . Saved by new food distribution center

ORDER and efficiency mark the spacious new Food Center.

secondary school, health clinics and shopping facilities. The 56 communities contemplated are distributed among 10 districts, ranging from 150,000 to 300,000 people. Each district center will focus major shopping and public service facilities at a transportation hub.

An example of this approach is New Eastwick—a giant project expected to exceed one-third of a billion dollars in total investment. Philadelphia's Redevelopment Authority awarded a contract for renewal of this area to Reynolds Metals Co. of Richmond, Va., and Samuel A. and Henry A. Berger, local redevelopers.

Eastwick is the nation's largest urban renewal project in area, covering nearly 4 sq mi of low-lying land that has always been a problem. Much of the land is mosquito-breeding swamp, periodically flooded. Sewage-laden streams run through the site, for it has never been economically practical to build an underground sewerage system in the low sections, which constitute about 90% of the site. Junk yards and shacks help to despoil the place.

The Eastwick Plan envisions two-thirds of the 2,500 acres as residential, (including public and commercial areas) and one-third industrial. A greenbelt plot, landscaped with trees and shrubs, will separate the industrial park from the residential and shopping sections.

Constantinos Doxiadis, a world famous city planner from Athens, Greece, and project designer for the Reynolds-Berger group, plans to divide the residential area into 16 superblock sectors. Schools, churches, shopping centers and recreation areas will border a central greenway, which will connect the superblock sectors.

Like much of the Center City plan, the New Eastwick plan separates pedestrians and automobiles. A linking system of pedestrian lanes and overpasses will enable residents to walk anywhere in New Eastwick without ever setting foot on a roadway. Spine streets will carry major traffic around the residential sectors, with smaller streets leading to the interior. The smallest interior streets will end in circular cul-de-sacs.

Construction of the entire project, now under way with site preparation work by the city, is expected to take 10 years. Construction is divided into stages: three for industrial building and four for residential building. Homebuilding should start some time in mid-1961.

During the early stages, Eastwick's housing will be more or less conventional. In subsequent stages, however, as the results of Reynolds' continuing research program for urban-renewal residential building become available, new kinds of walls, partitions and other construction elements should appear.

Eastwick's predicted future population of 60,000, living in a varied community of detached, row and twin houses, priced from $10,000 to $18,000, will be about five times its present population.

The Plan for Industry

Eastwick's industrial parks are typical of Philadelphia's plan to keep industry in the city. The lag in manufacturing growth forecast by the Planning Commission's market research consultants increases the urgency of the city's task. Balanced industrial development is essential to preserve a wide tax base, to provide jobs and to contribute generally to the city's economic health.

The Comprehensive Plan attempts to remedy the situation that has caused industry to desert the city: the scarcity of industrially zoned tracts large enough for the sprawling one-story buildings required by assembly-line manufacturing. It calls for 18,000 acres to be zoned industrial by 1980. This is an increase of 43% over the land area presently occupied by industry. And most of this new industrial land will be clustered in large tracts that are located in outlying areas.

The industrial parks will differ drastically from past industrial development, when slums often grew up around tiny industrial islands. Single-story structures with space for parking, loading and landscaping will replace multistory loft buildings, already abandoned by many industries.

The first and most dramatic example of Philadelphia's industrial redevelopment is the world's most modern food distribution center, estimated to cost $100-million before it is completed. This project was required to rescue Philadelphia's great wholesale food industry from its poor environs in the Dock St. area.

The ancient Dock St. Market was a particularly obnoxious and inefficient place for doing business. Its crooked street was the scene of incredible traffic congestion (see photo). Traffic delays added to food-handling costs. Outmoded, unsanitary buildings further raised food-handling costs and lowered food quality. Sidewalks cluttered with foodstuffs, broken boxes, chicken coops and egg crates contributed to the general filth and confusion.

A low-lying, almost vacant site of nearly 400 acres in the southeastern section was chosen for the new center. Through the Redevelopment Authority, the city acquired title to the land and began site preparation work in 1956. Part of the land had to be reclaimed by pumping hydraulic fill from the river. Grading, construction of streets, installation of water and sewer lines will run the city's acquisition and preparation costs to $15 million. There is no federal aid for this project.

As site preparation work proceeds in stages, the Redevelopment Authority turns the land over to the Food Distribution Center, another of the city's special-purpose nonprofit corporations. FDC takes over the construction of multiple-store buildings and leases them to merchant groups. Larger companies requiring separate buildings may design and build their own facilities, or FDC may provides these facilities on a lease-purchase plan. Either way, FDC leases or sells the land to all companies in the Center.

The $4½-million Produce and Seafood Building, opened for business in the summer of 1959, houses most of the companies evacuated from the Dock St Market. (Demolition for the Washington Square East project had to await evacuation of the Dock St. area.)

So far, FDC has leased or sold nearly half of the available land. On completion, foreseen by 1965, it will consolidate Philadelphia's food wholesalers and processors in 6 million sq ft of floor space. It will be isolated from through traffic by expressways on three sides and served by truck or rail.

Philadelphia's general program for industrial development really began in 1956 when City Council enacted an ordinance establishing the Industrial Land Bank program. Its major provisions:

- City-owned land can be sold to industry through the Redevelopment Authority.
- Proceeds from land sale go into a revolving fund for more industrial development.

Since 1958 this program has been administered by the Philadelphia Industrial Development Corp., still another of the city's private nonprofit organizations. As the city's official industrial development agent, PIDC purchases tracts from the Redevelopment Authority, takes title to those portions of the tracts for which it has lease or sale commitments from industry, and prepares sites for the tenants or purchasers. PIDC can also buy privately-owned land and develop it for industry.

Functioning as owner, mortgagor and lessor, PIDC works its build-lease agreements with industry this way:

- Arranges long-term financing (at low interest rates made possible by its tax-exempt status as a quasi-public agency).
- Builds new or renovates existing plants through the lessee company's architect-engineer-contractor team.

Lease agreements generally contain lease-renewal and purchase options.

Employing the city's power of eminent domain, PIDC also cooperates with the Redevelopment Authority in assisting established industries to expand in their present locations and to acquire land for off-site parking.

In less than two years, PIDC has promoted over $27-million worth of industry—completed, underway, or under contract. Among these projects:

- A $3.5-million office-warehouse building for Consolidated Sun Ray, Inc.
- A $4.5-million plant for Stephen F. Whitman & Son.

New Transportation Links

Philadelphia's port and airport facilities have grown with the rest of the city during the past decade. The $15-million International Airport, opened in early 1954, gave Philadelphia one of the nation's finest air terminals. Air passenger traffic has quadrupled since 1951 to an annual rate of 2 million passengers. Present construction will increase terminal floor space by 25%.

Fitting Cities to the Future:

Mobilizing the City's

During the past decade, Philadelphia's planners have learned some hard lessons about blending private and public action to accelerate the rebuilding process and make it more efficient.

Some major problems:

- How do you get business leaders directly involved in redevelopment?
- What is the best order for scheduling urban renewal projects?
- How do you win solid support from the citizens?

Mayor Dilworth and his planners are constantly searching for better answers to these questions. And their efforts have raised urban renewal above the level of partisan politics and made the city's rebuilding an urgent civic enterprise, backed by nearly everyone.

Reorganization for Renewal

Before Philadelphia's reform administration could undertake the more advanced problems of redevelopment, it faced a basic reorganization job.

Banishing the patronage system of previous administrations was a major achievement of Mayor Joseph S. Clark's administration, which took office in 1952. Civil service examinations for both entrance and promotion are required by the Home Rule Charter, and almost all of the city's 28,000 civil service employees have qualified under this system. Municipal posts, upgraded with higher salaries and rigorous qualifications, have attracted engineering, legal and administrative talent from all over

City Planner and Promoter

Edmund G. Bacon

Recognized as one of the nation's foremost city planners, Edmund G. Bacon has been executive director of Philadelphia's Planning Commission since 1949, just a few years before the Planning Commission obtained its new powers under the Home Rule Charter.

A graduate of Cornell University's school of architecture, Mr. Bacon has had a varied career as an architect and planner. In the early thirties he worked in an architect's office in Shanghai. He had been in planning work since 1936, when he undertook graduate studies in city planning.

Penn Center is one of Edmund Bacon's most dramatic achievements. He had uneasy moments after presenting his original plan for Penn Center in 1952, shortly before the Pennsylvania Railroad began demolishing the old Broad St. Station and the Chinese Wall occupying the site. At one time it appeared that the Penn Center strip might fall into the old haphazard growth pattern. But backed by Mayor Clark, Ed Bacon won his battle for spacious vistas. Though the result represents a compromise with his original plan, which included a sunken Chinese garden that would have been three blocks long, Penn Center is his monument to large-scale planning.

Mr. Bacon is also known for his insistence on good community planning—for residential tracts that preserve space through compact layout, yet allow plenty of space for recreation and greenery. Working with 20 private builders, Planner Bacon and his staff are developing an open-spaced community for 68,000 in Philadelphia's far northeast section.

Ed Bacon is more than a planner—he is an articulate salesman for city projects and planning in general. Last spring, after he presented Philadelphia's Comprehension Plan at a packed luncheon meeting held by the Citizen's Council on City Planning, the usually voluble Mayor Dilworth was left with little more to say than, "Amen!"

Philadelphia's seaport, the world's largest fresh water port, is the city's greatest single economic asset, providing $800 million annually in direct income. Modernization and promotion activities have increased the port's annual tonnage by 40% since 1951.

A recent example of port expansion: a $15-million general cargo terminal located adjacent to the Walt Whitman Bridge.

The latest in expansion plans: Reservation of two tracts on the Delaware River for development into air-rail-truck-marine terminal centers. Located near International Airport, the twin 100-acre sites will contain berthing facilities for five ocean-going ships. Adjacent to the piers will be cargo-storage sheds, warehouses, railroad and truck loading areas.

Resources for Redevelopment

the country. Applications increased from 3,600 in 1951 to 125,000 annually in the late 1950s.

The Charter made a great organizational reform in creating the Department of Licenses and Inspections, which unifies all the city's licensing and inspection services.

Modernization of several city codes followed. A revised building code, now under review in preliminary form, will soon give Philadelphia one of the most modern codes in the country (ENR Mar. 10, p. 26). In 1954 City Council enacted a new housing code ordinance. It supplanted an outmoded city housing code enacted by the Pennsylvania legislature 40 years earlier.

The Charter made its greatest contribution to urban renewal by strengthening the role of the City Planning Commission. This department, which formerly operated in a partial vacuum, now has the important task of preparing the Capital Program.

The Capital Program sets forth Philadelphia's development policy six years ahead, allocating funds for permanent physical improvements. City Council enacts a revised program each year.

In outline, here's how the Charter provides for hammering out the Capital Program:

- The Planning Commission discusses project requests with the various department heads who have submitted them.
- After considering the requests in light of over-all objectives, project urgency and fiscal policies, the Planning Commission submits a Capital Program to the mayor for his review and transmission to City Council.
- City Council holds public hearings, after which it may delete projects, but may not add any.
- The Planning Commission submits a revised program, which, if accepted by City Council, is enacted as the Capital Program. (The first year of the Capital Program, known as the Capital Budget, is enacted by separate ordinance appropriating funds for the ensuing fiscal year.)

Above all, the Planning Commission's proposals must conform with sound fiscal policy. They must clearly distinguish between tax-supported and self-supporting projects (e.g., water and sewage treatment plants), which are investigated for their ability to bring in sufficient revenue to repay their costs. City Council has authorized over $30 million in fully self-supporting projects for the 1960 Capital Budget.

Tax-supported projects for the 1960-65 Capital Program are limited to $25 million annually. By 1961, debenture bonds issued to finance these tax supported projects will be limited to 90% of the total annual expenditure, 10% being paid in down payments from current operating funds.

Reflecting a first-things-first policy, the emphasis in capital programming has shifted from basic service facilities toward reconstruction of blighted sections. The biggest single category in the 1954-59 Capital Program (except for highways) was $132 million for sewage disposal facilities. Only $78 million is marked for this purpose in 1960-65. On the other hand, the Redevelopment Authority's expenditures are scheduled to rise 350%—from $40 million in 1954-59 to $178 million in 1960-65.

A Change in Policy

Experience has taught Philadelphia's planners that urban renewal is a tougher problem than it first appears, for a city

Policy-Maker and Programmer

William L. Rafsky

Ubiquitous William L. Rafsky occupies two key posts in Philadelphia—one concerned with formulating redevelopment policy, the other with carrying it out.

A former expert in labor relations and housing coordinator under the Clark Administration, Mr. Rafsky was appointed Development Coordinator by Mayor Dilworth, who created the post shortly after taking office in 1956. Two years later Mr. Rafsky became director of the Philadelphia Redevelopment Authority.

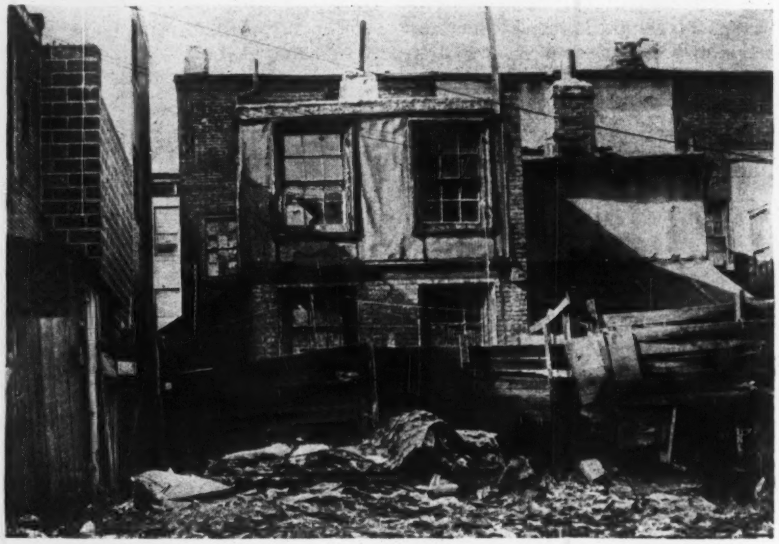
These two jobs require a range of activity as broad as urban renewal itself—from the technical problems of analyzing the engineering and financial feasibility of projects to delicate problems in human relations.

Eastwick, the nation's largest redevelopment project in area, has been Bill Rafsky's greatest challenge. Throughout its 10-year planning period, Eastwick encountered public hostility. And though concentrated in the area's residents, this public opposition was well vented through City Council.

During the long series of public hearings on Eastwick, the chairman of the City Council's finance committee proposed cutting the project into pieces, to be financed and developed one at a time. Director Rafsky countered that this proposal was extravagant. For under this plan each parcel of land, as it was developed, would raise the price of adjoining land. Eventually, the city would pay a higher total land acquisition price than if it condemned the whole area at once. He won his point when Mayor Dilworth persuaded City Council to approve the original plan.

Bill Rafsky points to Eastwick as good evidence that urban renewal is good business. The city's total contribution to Eastwick will amount to about $32 million. An expected annual increase of $7 million in school and real estate taxes would restore the city's capital investment in Eastwick within five years after project completion.

. . . Code enforcement stems spread of slums



HOVELS like this are being eliminated by strict code enforcement.

is more like a complex organism than a collection of separate cells that can be treated independently.

After $10 million had been spent clearing some of the city's worst slums during the early and middle fifties, it became obvious that slum clearance alone was not enough. Originally, the planners hoped that the example of new housing projects built on cleared sites would stimulate private rehabilitation in the surrounding slums.

But this hope proved unrealistic. Too often, families displaced by slum clearance moved to the fringes of their old districts, overcrowding the dwellings there and accelerating decay. The result: slums were growing at a faster rate than sites were cleared and rebuilt. And a cost estimate for clearing existing slum sites and rebuilding them with new housing exceeded $1 billion.

Slum prevention is even more urgent than slum clearance: this was a major lesson learned from Philadelphia's early experience in urban renewal. In 1957, neighborhood conservation projects, administered by the Redevelopment Authority with federal urban renewal funds, took priority over slum clearance projects. And they were instituted first in the more salvageable parts of the city's older residential areas.

To plan conservation strategy, the Planning Commission and the Redevelopment Authority jointly undertook the Central Urban Renewal Area (CURA) Study. CURA encompasses 25-sq-mi comprising Center City and the adjacent sections to the north, west and south. (The Delaware River bounds CURA on the east.)

Residential sections in CURA are subdivided into three classes, depending on severity of blight:

- A areas (the worst) require an estimated 40 to 67% clearance
- B areas—14 to 40% clearance.
- C areas—0 to 14% clearance.

Under an Area Inspection Program begun in 1958, housing inspectors have completed door-to-door inspections of 300,000 of the 550,000 dwelling units in CURA. They hope to complete their inspections by mid-1961.

For ten years prior to 1955, housing inspections were made only in response to complaints. And even this desultory kind of code enforcement was lacking in the two decades before 1945. Under the old 1915 housing code, inspection started lagging during the Thirties. By 1950, it had become almost totally ineffective.

The new housing code not only gives the city higher housing standards; it also gives the Department of Licenses and Inspections stronger enforcement powers in dealing with the toughest obstacle to slum prevention: the slumlord.

For recalcitrant landlords who require stronger enforcement procedures than are provided in the housing code, the city has adopted more persuasive methods. Among them:

- A "slum-prevention" court empowered to levy fines up to $100 for each day a violation remains uncorrected and even to impose jail sentences.
- A procedure whereby the city places a lien against the property and sequesters the rents if the owner refuses to pay.

But the sheer magnitude of the housing shortage makes enforcing code compliance a goal that neither Philadelphia nor any other city with a similar problem has completely attained.

Two Roads for Housing

The blending of private and public action in Philadelphia's urban renewal program is much in evidence in the manifold approach to the housing problem. While code enforcement provides a holding action, pioneering projects mark the rebuilding needed to reduce Philadelphia's housing shortage.

Having put nearly 12,000 dwelling units into operation during the past 20 years, the Philadelphia Housing Authority has moved far beyond the stereotyped clusters of apartment towers that have become a dismal synonym for public housing. Philadelphia's architects and planners have found that clearing slum sites and then packing people into high-rise dwelling units offers only a partial solution to the social problems of the slums. Consequently, the newest public housing projects are smaller and more sparsely settled.

The Morton neighborhood conservation project, in Philadelphia's Germantown section, illustrates the new approach. Nearly 200 public housing units will be scattered throughout the 15-block area in groups of from four to 20.

Private housing projects in Philadelphia range from construction of new luxury apartments to rehabilitation of incipient slums.

Park Towne Place, a $17.5-million development of four 18-story apartment towers located at the scenic northwest corner of Center City, shows why urban renewal is good business. Though it was built without federal aid, Park Towne Place should return the city's land write-down costs and capital investment within eight years after project completion in 1959. Real estate tax yield from the property has increased by more than $200,000 annually. The project owners also pay $75,000 annual land rent to the Redevelopment Authority.

Several privately-sponsored rehabilitation projects mark Philadelphia's neighborhood conservation program. The nation's first rehabilitation project under the Housing Act of 1949 was a unique cooperative effort sponsored by the American Friends Service Committee. A square block of decaying dwellings dating back to the Civil War era was rebuilt into 88 modern apartment units through a cooperative corporation, which financed the project through FHA-insured mortgages. The former

. . . New housing replaces slums, widens tax base

APARTMENT TOWERS on old slum site are economic and aesthetic boon.

tenants became owner-occupants, many of them earning their stock in the cooperative through their own labor on such jobs as sanding, painting and demolition.

The Powelton Village urban renewal project shows how to reverse the apparently inexorable decay of a declining neighborhood—and without federal aid. A 25-block area in West Philadelphia, Powelton Village started sliding during the post-war period. By the mid-50's the familiar process was well under way: white homeowners selling, three-story houses becoming crowded tenements, minority groups moving in.

Through the aggressive action of a neighborhood real estate company and a civic group, Powelton Village has come a long way during the past four years. Powelton Village Development Associates, the real estate company, has bought 40 residences, repaired them, and cut the number of dwelling units in overcrowded buildings to decent proportions. The real estate company also operates 450 open-occupancy apartments—130 of its own and 320 as agent for other owners.

Powelton Neighbors oversees the rehabilitation program. It "educates residents to the why's of rehabilitation and encourages them with the how's," acting as an information clearinghouse.

Urban Renewal Catalyst

Urban renewal is a tortuously slow process at best, requiring about two years in the planning stage for an average project. Beginning with certification, a project moves through a seemingly endless series of surveys, hearings, appraisals, approvals, acquisition, demolition and, finally, construction.

Most of the red tape is, of course, inevitable in anything as complex and of such widespread concern as urban renewal. But if it is not to bog down in a mire of technicalities, an urban renewal program must have vigorous support from businessmen with the power to make things move. And Philadelphia has found a way to get this support and to forge a short, solid link between public and private action—through the private nonprofit corporation with quasi-public status.

Though set up for different purposes, the nonprofit corporations share common features:

- A non-paid board of directors composed of business and civic leaders.
- A small, top-flight executive staff.
- Concern with projects of wide community interest.

The Philadelphia Industrial Development Corp., which sprang out of mounting concern with the city's loss of industry, exemplifies the advantages of the nonprofit corporation in the redevelopment process.

The Chamber of Commerce of Greater Philadelphia and the city government formed PIDC in 1957 to add a new dimension to the city's industrial development. In 1958, City Council designated PIDC as Philadelphia's official development agent.

An alternate method of promoting industrial development would have been to extend the scope of the City Commerce Department. PIDC was chosen for three reasons:

- Its organization could continue almost independent of changes in municipal administration.
- Its Board of Directors could be composed primarily of successful businessmen who had proven themselves competent to deal with the problems of industry.
- PIDC could operate with greater flexibility than a city agency, because it would not be hampered by charter limitations on debt and on purchase and disposal of property.

On the other hand, public interest in PIDC's operations is protected by legislation governing the industrial uses of city land and by top-level city representation on PIDC's Board.

PIDC thus combines many unique advantages of a private business concern and a public agency in its role as an industrial promoter and redeveloper. In particular, its access to tax-exempt financing can be of decisive importance in holding an industry in Philadelphia.

Financing of PIDC is shared equally by the Chamber of Commerce and the city. PIDC's 1959 budget of $150,000 was supplemented with $75,000 in state matching funds. By retaining a small portion of the increased value of the land it develops, PIDC hopes to be self-supporting by 1961.

A predecessor of all and parent of some of the nonprofit corporations is the Greater Philadelphia Movement. GPM was created in 1949 and patterned after Pittsburgh's Allegheny Conference on Community Development (ENR Nov. 19, 1959, p. 57).

The Greater Philadelphia Movement, however, struck out on broader paths than the Pittsburgh organization, which confined itself chiefly to construction programs. In union with other civic groups, GPM chose a political problem as its first project—the enactment of the Home Rule Charter.

GPM was active in launching the Food Distribution Center and the Old Philadelphia Development Corp. Many of the members on the GPM board also serve on the boards of these nonprofit corporations.

During the past several years GPM's projects have ranged from financing of a sociological study called "What to do Before Skid Row is Demolished?" to promoting a regional planning organization known as PENJERDEL. These projects conform to GPM's policy of acting as a problem-finder and project-initiator rather than redeveloper.

The other nonprofit corporations have sprung up in response to specific needs. And however their activities may vary, they all involve civic and business leaders directly in the urban renewal process.

A Bridge to the Public

Whereas the nonprofit corporations link the municipal government with business leadership, the citizens' groups link the government and the people.

The citizens' groups combine and focus the viewpoints of local community member groups. They make professional criticism on government projects and policy and conduct public information programs. They testify at public hearings, rendering citizen opinion more articulate and thus more powerful in influencing public policy.

The Citizens' Council on City Planning sends spokesmen to testify at City Council hearings on the capital program. CCCP Committees reviewed almost the entire Comprehensive Plan, contributing detailed criticism on several parts of the plan.

The Philadelphia Housing Association sponsors, among others, a Committee on Housing Code Enforcement. The lay members of this group, backed by the Association's hard-working staff, have rigorously studied every phase of housing inspection—from inspector training, scheduling and techniques through compliance procedures.

The Committee works closely with the Commissioner and other officials in the Department of Licenses and Inspections. And its frank and constructive criticism has contributed much to Philadelphia's code enforcement program.

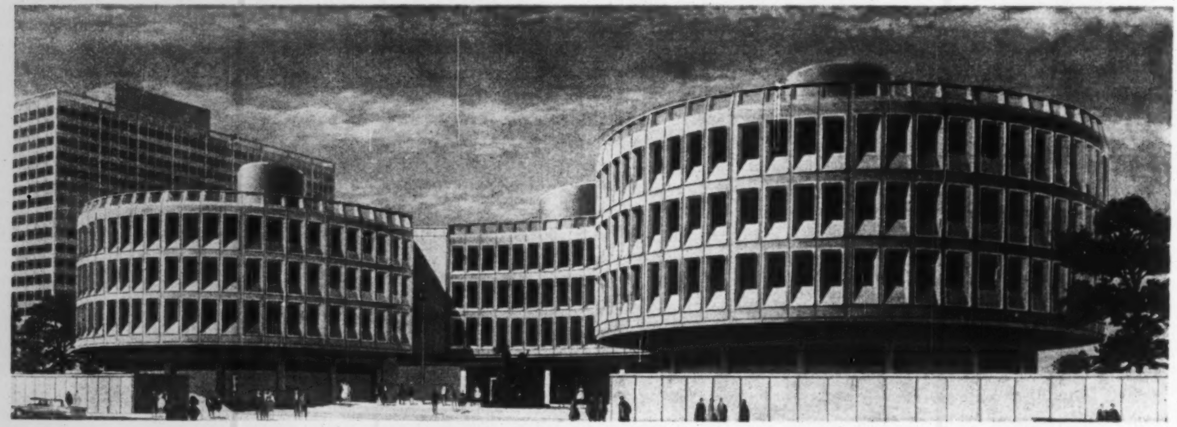
Challenge of the Future

Concerned about its future despite Philadelphia's great progress, Mayor Dilworth is a tireless worker for expanded urban renewal. As president of the U. S. Conference of Mayors and vice president of the American Municipal Association, he is perhaps the nation's foremost advocate of more federal urban renewal funds. He and his predecessor, Joseph S. Clark (now U.S. Senator), urge creation of a U. S. Department of Urban Affairs.

Many Philadelphians don't believe the cities are getting a fair share from either the federal government or the state. Over the past five years, for example, the Pennsylvania State Highway Department has spent less than 7% of its total highway expenditures in Philadelphia, which has 20% of the state's population and 15% of the automobiles.

Another complaint concerns the lag in regional planning and programming to complement the city's program on a metropolitan basis. William H. Wilcox, executive director of the Greater Philadelphia Movement, says that his organization has generally had greater success in promoting city projects than in promoting regional projects, despite such notable exceptions as the regional Food Distribution Center. Philadelphia's invitation to neighboring suburban communities to join the Passenger Service Improvement Corp. has met a cool reception so far.

Some Philadelphia planners foresee dark days ahead for the suburbs. They say that the suburbs will have to start moving soon if they expect to cope with the problems created by an over-all doubling of the metropolitan regions suburban population, predicted by 1980. As housing developments multiply, taxes rise, and urban sprawl, school shortages and traffic jams grow, the suburbs and exurbs may find their status with the status-seekers declining if they don't catch the city's tempo.



Fitting Cities to the Future:

Pioneering in Precast Concrete

Symbolic of Philadelphia's renaissance is the $4.3-million Police Administration Building, a pioneer structure in precast concrete now under construction.

Located within the boundaries of the Independence Mall Project, the new headquarters for Philadelphia's police will greet motorists entering the city via the Ben Franklin Bridge. And they will have to look hard to find a straight line in the "sculptured" walls of the five-story structure.

The search of Philadelphia architects Geddes, Brecher & Qualls for an expressive wall material led naturally to precast concrete because of the freedom in forming and finishing. The architects also gained the economic advantages of repetitive fabrication by designing to a circular module, which resulted in standard-width wall panels and wedge-shaped slab units.

In plan, the building's serpentine shape is generated from six points, three interior and three exterior. Three circular elements of 50-ft radius form the basic layout of two wings and a central core. Out-to-out dimension between

(*Continued on p. 59*)

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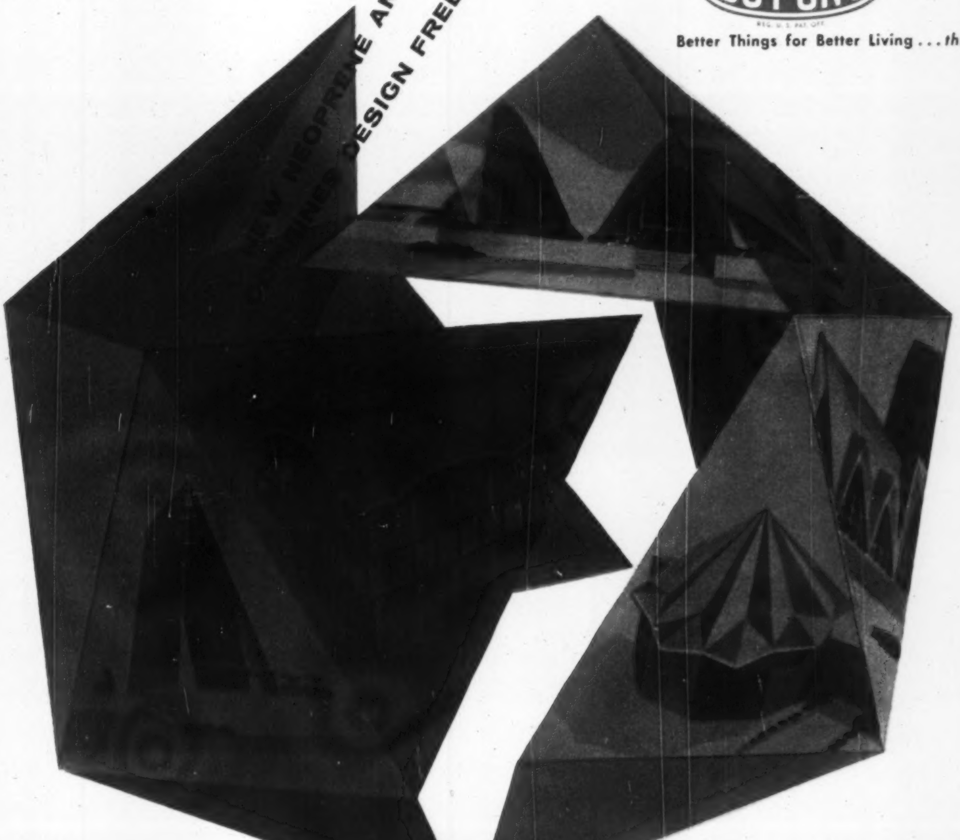

Steel cofferdams 105 ft high for new Ohio River dam

Construction of the new Markland Locks and Dam on the Ohio River will replace five outmoded locks and dams with one modern structure. The new facilities will allow faster lockage, faster operation of tow-boats, and sizable reductions in maintenance.

Bethlehem is supplying nearly 8,500 tons of steel sheet piling for cofferdams used in constructing the 1416-ft long dam which extends from the Indiana shore to the locks on the Kentucky side. The dam, a tainter-gate type with piers founded on rock, is being built in three stages. The first stage cofferdam consists of 19 circular cells each 58.89 ft in diameter, with the top of the cells 50 ft above the river bed and the bottom of the cells on bedrock, a total height of 105 ft. Within this area and adjacent to the upstream cells, rectangular braced cofferdams of Z-piling driven to rock insure safe excavation through the 55 ft overburden of sand and gravel for construction of the pier foundations.

The Markland Dam is a project of the U. S. Army Corps of Engineers, Louisville, Ky., District. The dam is a joint venture of J. A. Jones Construction Co. and Charles H. Thompkins Co.

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. . . Prestressed overhang carries three levels

the two wings is 284 ft. Two gently-curving arcs join the two wings to the core section at the rear, and a longer arc connects the two wings at the front.

On completion, scheduled for spring 1962, the Police Administration Building will replace the overcrowded Police Department headquarters now occupying two floors in City Hall. Facilities normally open to the public (the radio communications center and an auditorium) will occupy the lobby floor level of the new building.

The basement will house prisoner processing areas and holding cells. Offices and laboratories will occupy the first, second and third floors. Elevator machine rooms and air-conditioning equipment will be enclosed in three penthouses.

Office space on the typical floors is generated by a continuous curved path of constant 32-ft width, extending unbroken from one end of the building to the other. This column-free arrangement offers both flexibility in partition layout and highly efficient use of space (78% ratio of net assignable area to gross).

Corridors are of variable width. They are bounded by the exterior wall at the building front.

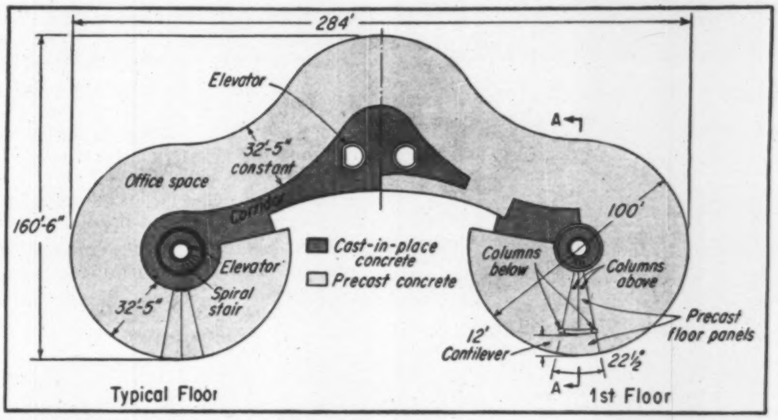
The concrete superstructure contains 90% precast concrete, comprising precast wall, column and ribbed-slab units. Cast-in-place concrete is limited to foundations, lobby floor and corridor framing, and the cylindrical shafts housing stairs and elevators.

Key elements in the structural framing are the precast concrete bearing wall panels—channel-shaped sections 5 ft wide x 35 ft high, with 2½-in.-thick webs and flanges 21 in. deep. There are 144 of these basic units, differing only in the width of connecting "ears." Wide ears enclose high-velocity air risers; narrow ears enclose heating piping.

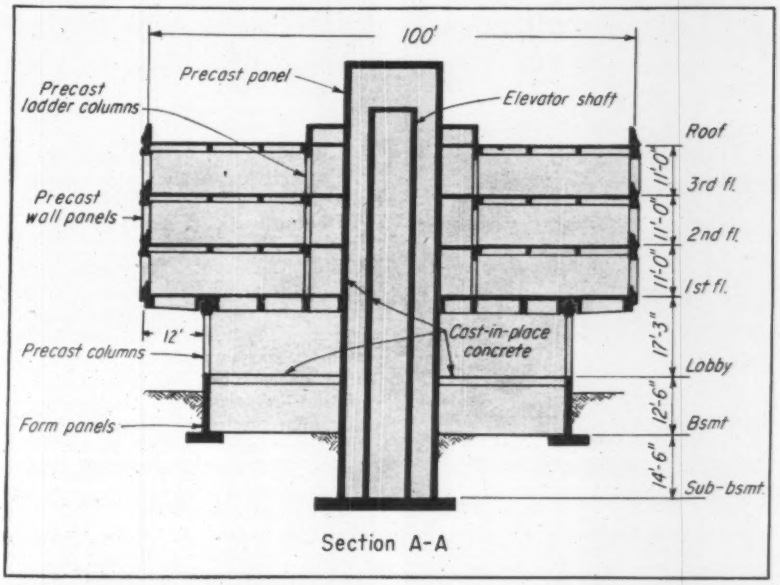
The economy of standardization is even greater for the 180 ribbed slabs. Standard slab sectors form 1/32 of a circle, with slabs 2½ in. thick and ribs 17½ in. deep. Two exterior ribs span a full radial length. One interior rib spans two-thirds of a radial length, terminating at one of two diaphragm ribs located at third points of the span.

The design of the precast wall and slab units was precisely coordinated with the mechanical design. Recesses, depressions and rib spacings are detailed to enclose piping, heating units, air conditioning ducts and diffusers and lighting fixtures. This eliminates the need for suspended ceilings.

The exterior wall panels carry the precast framing for three levels (two floors and roof). "Ladder" columns, precast in 35-ft-high pairs and joined by tie beams, support the 32-ft-span floor and roof panels at the corridor.



SERPENTINE PLAN offers efficient use of space.



POST-TENSIONED CANTILEVERS carry three floors above.

At the first floor, precast floor units are post-tensioned for a building overhang around the two wings and along the rear wall. The exterior wall panels bear on the end of a 12-ft cantilever span. Typically, a pair of interior floor panels, each precast in wedges of 11¼-deg arc, align with one ribbed cantilever unit of 22½-deg. arc. All these members—wall panels, floor panels and ladder columns—are conventionally reinforced.

Framing between one-story precast columns at the first floor level is a deep, curved beam with concave, rounded sides. It carries both interior and cantilevered floor units on continuous brackets.

At the two wings, the interior floor panels bear on the cast-in-place circular wall that houses the spiral stairs; in the central core, they bear on precast columns.

The first-floor framing will be post-tensioned with high-strength bars of 150,000-psi ultimate strength. Design for a typical panel of 22½-deg arc specifies eight tendons placed in the top of the 37-in.-deep ribs and carried continuously through the interior span.

Six additional tendons are carried only through one-third of the interior span to provide additional prestressing to resist the cantilever moment over the exterior columns. They will be anchored in pockets formed in the top

. . . Two stages for erection

of the ribs and later filled with the concrete floor topping.

The interior first-floor panels are designed as combination prestressed-reinforced members. In addition to floor load they will carry the precast ladder columns supporting the floor and roof framing above. Positive moment, however, is greatly reduced by the cantilever moment at the overhang. For the severest loading condition only two #8 reinforcing bars are required in the bottom of each rib.

Construction of the stair and elevator towers to penthouse level will precede erection of the precast framing. The carpenters will form pockets and keys in these walls for the wall-bearing precast framing and cast-in-place floors and stairs.

Erection of the precast framing will follow in two stages: first, the main floor columns and floor units will be erected and post-tensioned; then the wall, floor, and roof panels above will go into place.

Cornell & Co., Inc., of Woodbury, N. J., the erection subcontractor for the precast framing, plans to start both stages from the west wing end wall. A 100-ton truck crane will wind around the building feeding panels into it from a tangential position.

The first-floor framing will require temporary shoring at the cantilever ends. The erectors will post-tension each section immediately after it goes into place. They will jack from the exterior end, limiting initial prestress so that final prestress will not exceed 0.6 ultimate strength, or 90,000 psi. (Application of dead and live load will increase prestress in the interior span.)

Post-tensioning will lift the ends of cantilever units off their temporary shoring. Application of dead load will return the camber to ¼ in. Under total load a ⅛ in. residual camber will remain to counter long-term deflection resulting from plastic flow.

All tendons will be pressure-grouted inside the 1¾-in. flexible steel conduit for protection against corrosion.

The upper stories will go up three at a time, after all the first-floor framing has been prestressed. Framing for a 22½-deg arc sector will form each erection unit.

Matching plates are embedded in the precast units for field-welded connections. A 2½-in.-thick concrete topping will cover these joints, as well as the electric conduit in floor slabs.

Exposed joints in the wall panels and soffits of the first-floor framing will be sealed with a polysulfide, nonstaining caulking compound hiding sponge-rubber gasket.

Originally, the first floor framing was designed as cast-in-place concrete. But the architects later decided on an exposed aggregate finish of white cement and crushed quartz for the exposed precast concrete. The necessity of matching this finish and the complex forming required for the ribs led to the final first-floor design in precast concrete.

To preserve the quality of the exposed concrete finish, the designers specified 2½-in.-thick form panels set in the basement walls. These walls are exposed from finished grade to the lobby floor.

The general contractor, Sovereign Construction Co. of Fort Lee, N. J., has completed demolition of the old buildings on the site and placed concrete for the foundations. Exterior column foundations are isolated spread footings. Three foundation mats, 2 ft thick, will support the interior columns and the cylindrical shafts housing stairs and elevators.

The subcontractor for manufacture of all precast members, Eastern Schokcrete Co. of Bound Brook, N. J., is building plywood mahogany molds with cabinet-work precision. Eastern Schokcrete plans to get 40 to 50 re-uses from each mold.

During concreting, the molds will be placed on low-frequency "shock" tables to produce high-density concrete from the no-slump, 5,000-psi mix. Bar clearances are very tight.

Surfaces scheduled for an exposed aggregate finish will be sandblasted and chemically-treated at the Schokcrete plant before shipment to the job site. The architects selected this method after inspecting other samples in which a retarder coating on the molds delayed hydration of the surface cement, which was then brushed away.

Plant location 65 mi from the job site is considered a minor disadvantage. Most precast panels will weigh less than 20 tons and pose no special trucking problems.

Despite the building's monumental character, it is an economical structure. Deducting the cost of demolition and special equipment (e.g., cells), the architects compute a unit cost of $28 psf based on gross floor area, $36 psf based on net usable floor area. This compares favorably with several recent buildings of similar class.

David Bloom, Philadelphia consulting engineer, is structural engineer. August E. Komendant, Consulting Engineer of New York City, is consultant on precast concrete work. He designed the precast elements and will also supervise their fabrication, shipment and erection.

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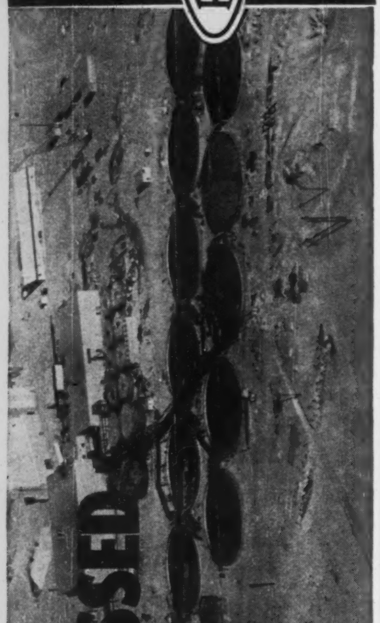

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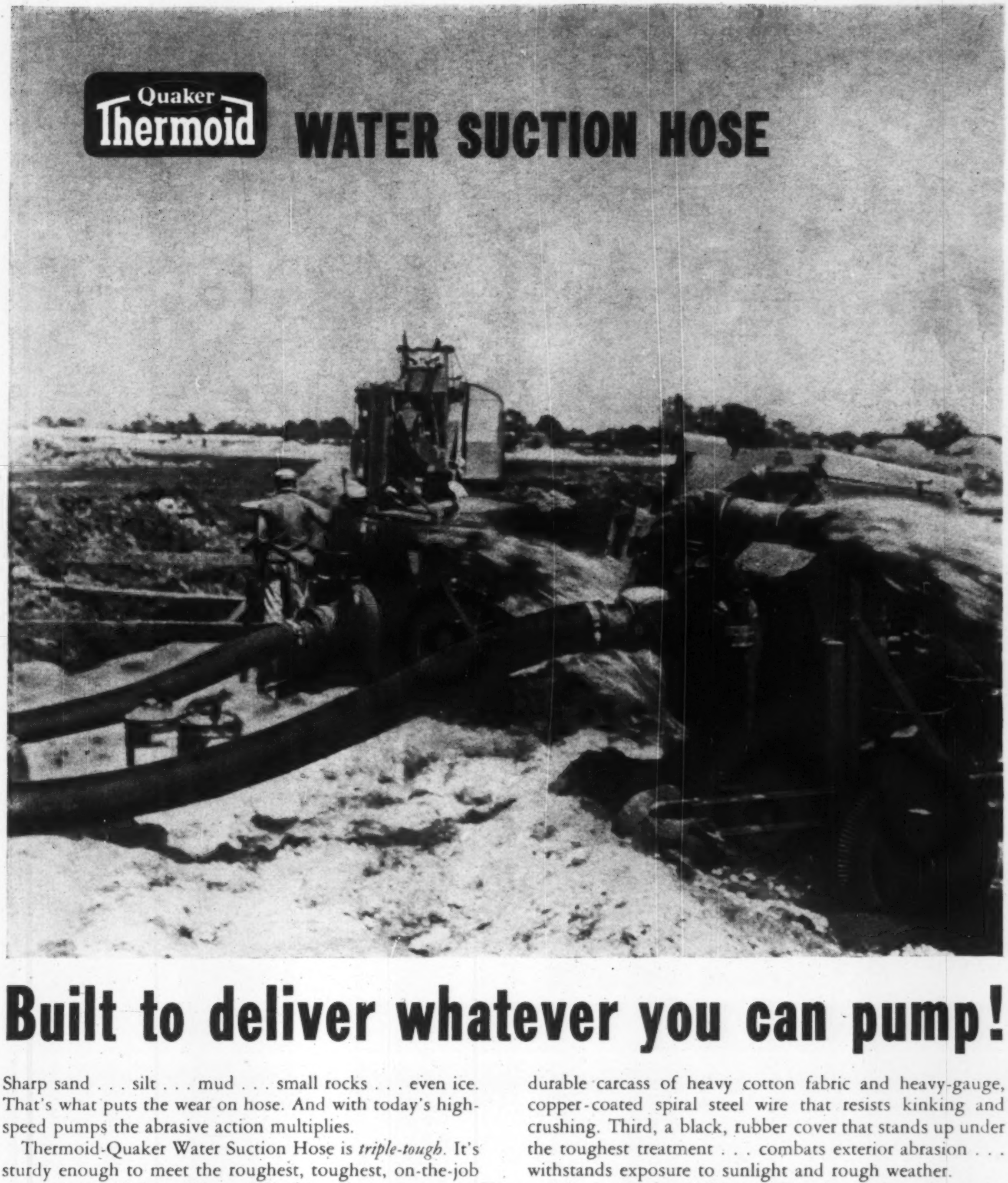

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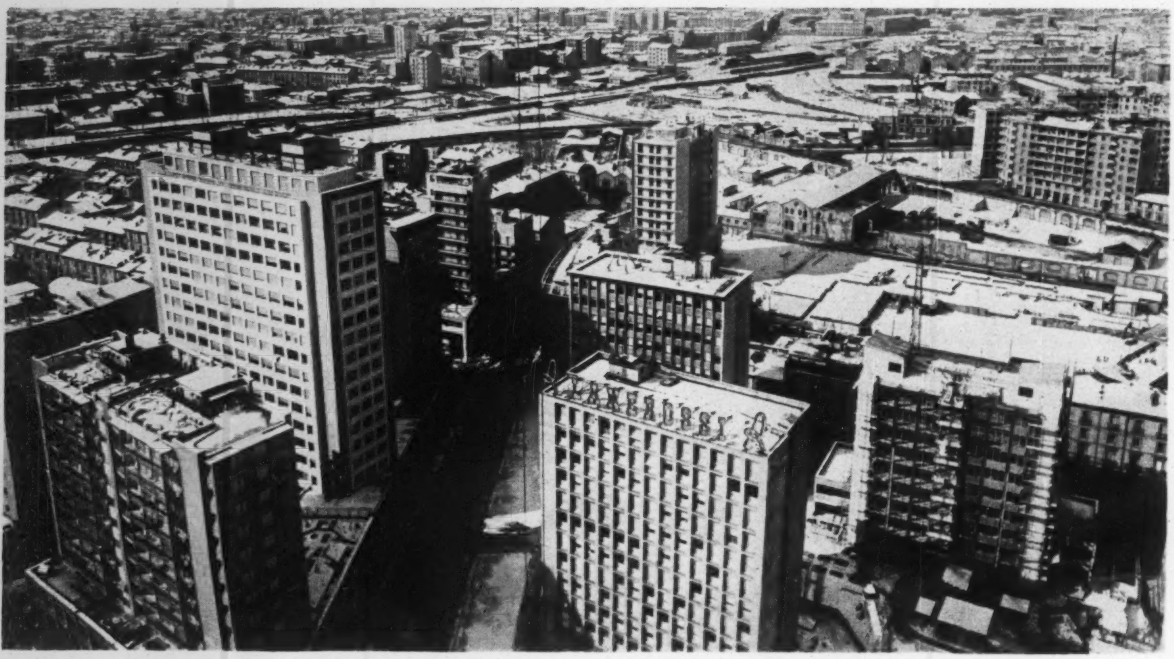
LETTER FROM MILAN:



NEW BUSINESS DISTRICT, to cost $250 million, will eventually cover 202 acres in the heart of the city.

Milan Builds Itself into Italy's

By Gene Di Raimondo

While most European cities retain a personality and appearance unchanged over centuries, Milan, in northern Italy, is growing into a new colossus.

There is a hurry, a rush and a push in Milan, an urgency not felt anywhere else in Southern Europe.

The people are anxious to build, produce, compete.

Construction is the most obvious sign of this drive. New structures, from a baseball field to Europe's tallest building are mushrooming all over the city.

Most ambitious project of Milan's administrators is the construction of a new business center, a city within a city—Milan's "Manhattan," it has been labeled. Construction of the center, already underway, is scheduled to be completed in 1964. Then the dreamy 19th century peace will be restored to Milan's old center as the rhythm of business shifts to the new zone.

Called "Centro Direzionale" and costing about $250 million, the new business center will cover 202 acres immediately north of the present city center. The new zone will be studded with office skyscrapers.

Three skyscrapers are already completed: the Pirelli Rubber Co. building, 32 stories and 417 ft high—Europe's tallest—the Galfa and Republica skyscrapers respectively 377 and 360 ft high. Abuilding is a fourth skyscraper, the St. Gobain building, and others are projected. Minimum building height in the new center is 99 ft.

In harmony with the "Centro's" new look, two railroad terminals, a suburban train station and the central station situated in the area will be completely done over. The "Varesine" commuter train station is being built anew and will be connected with the subway presently under construction.

A much greater effort will be the overhauling of the existing central station, built during Fascism in the mastodontic and cumbersome pseudo-classical style of the era. The front part of the edifice will be demolished and replaced by a sylphlike, airy and functional building housing the railroad administration offices, air and sea lines. A heliport will be built over the railroad tracks. The square before the station will undergo a complete metamorphosis. A wide ring with diametrical road inlets and outlets will handle the heavy traffic, including 150 million train passengers annually.

An air terminal will be built within the station area and connected by light, fast trains with Malpensa airport, about 30 miles north of the city. A bus terminal connecting the station with all city points will complete the project. The entire complex will be connected through underground passages with the subway stations.

But what has transformed Milan into one huge building site is the construction of the subway. The surface and entrails of the city's main arteries are being ripped up, the rerouted traffic alleys making a maze out of the city and trying the patience of drivers. Milan's "Metropolitana," as the subway is called, will develop along four main lines for a total of 23 miles. The first

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ENR Correspondent Gene Di Raimondo *has been chronicling the rise of Europe's fastest-growing city for the past four years on assignment from McGraw-Hill World News*

EUROPE'S TALLEST building is 417-ft-high Pirelli Building.

CLOSE BEHIND is the Galfa Building, which rises 377 ft.

'Manhattan'

line, nearing completion and eight miles long, will run north to southwest. The second line, 5.3 miles long, will run east to south through center. The third line, 3.5 miles long, will run north to south, and the fourth line, five miles long, will run northwest to southeast.

Open width of the subway tunnels is 23.6 ft, allowing passage of cars 9.35 ft wide in either direction. Subway stations are situated at average intervals of 1,935 ft. Station platforms are 348 ft long to serve up to six car trains and traffic of over 40,000 passengers an hour in each direction.

Construction of the subway costs approximately $2.56 million per mile ($5.12 million per mile if the cost of shifting street car lines and sewers, electrification, etc., is added).

The project is being financed by the "Societa Metropolitana Milanese," the company building and managing the subway, and through loans fully guaranteed by the Milan city budget—the only one in the black of all Italian cities.

The entire Milan subway network will cost roughly $120 million and should be operating by 1970. The first line is slated to start running by the end of 1961 or beginning of 1962.

A chronic thorn in the side of Milan's city fathers has been the jam caused by transit traffic from 18 roads leading into Milan. To solve the problem partially, the city is putting up some $100 million to build two expressways and three tangential roadways connecting all highways converging on the city for an approximate total of 50 miles.

The two expressways will cross at the traffic ring in front of the new central station. One, running from southeast to northwest, will connect the "Highway of the Sun" to the Turin, Lakes, Como, Bergamo and Brescia turnpikes; the other, running from southwest to northeast, will connect the new Genoa-Milan turnpike with the Stelvio highway. The three tangential connecting roads will be situated to the north, south and east of the city.

The expressways and tangential roads will be 46 ft wide, with four lanes, two in each direction. The inner lanes will be 11.5 ft wide for heavier traffic and the outer lanes 9.8 ft wide. Construction is already under way with the

SUBWAY under construction will have 23 miles of track.

MODERN HOUSING combines American ranch designs with more traditional Italian apartment structures.

entire project scheduled for completion by 1970.

Equally important is the city's multimillion dollar program for housing, schools, sports fields, a covered fruit and vegetable market and underground parking lots. The Department of Public Works is even building a baseball field. (The city is apparently convinced that Milan's energetic sons can ride a ball farther than Ruth, Foxx or Mantle. The right and left field lines measure 393 ft and it is 560 ft to the center field fence!)

A drumming, drowning noise of diggers, cranes and pneumatic drills is marking the pace, day and night, of Milan's progress. But to the patient, industrious Milanese it has the sound of a sweet lullaby.

Maintenance Cut on New City Hall

Hong Kong's $20-million City Hall complex, now under construction, includes a 12-story and a three-story office building, a concert hall, theatre and an enclosed garden.

The designers' chief objective was to produce a building complex that would require a minimum of maintenance. Hong Kong's humid climate wears paint off after six months.

All internal finishes that normally would require white paint instead are being constructed of Torginol. This German-made, three-layered polyvinylchloride coating, with cork additive, will be applied to plaster walls. Also, extensive use will be made of facings of concrete incorporating marble (Italian) aggregate.

As a facing for the rear walls in auditoriums, the architects selected a padded leather reinforced with mineral wool instead of acoustic tiles. The leather will prevent musical echo. Ceilings will be made of plastic.

All the structures except the concert hall have reinforced concrete framing. The concert hall roof's 100-ft span is supported by steel trusses placed 14 ft c-c.

The City Hall complex was designed by the government Public Works Department. Architects are Allan Fitch, and R. J. Phillips. The structural engineer is S. L. Au. The contractor is the Cheong Lee Construction Co. of Hong Kong. Completion is scheduled for late 1961.

Mexico Starts Work On Big Earthfill Dam

A 447-ft-high earthfill dam, one of the largest in Latin America, is under construction on Mexico's Balsas River. The dam will be 984 ft long at the crest and 1,689 ft long at the base. Its crest width will be 38 ft. Volume of the dam will be approximately 6.4 million cu yd.

The Balsas River forms the boundary between the states of Michoacan and Guarrero. During the dry season its flow is slight, but from June to September, during the rainy season, its flows are torrential.

The dam will regulate the river's flow and retain a 5.7-million acre-ft reservoir. Some 600,000 kw of electrical energy will be generated in its power plant. Power from the four 150,000-kw generators will serve a 500,000-ton steel mill and industry in Mexico's central states. Plans for the steel mill include electric furnaces to process the iron ore.

Estimated cost of the project, scheduled for completion in 1964, is $24 million. Transmission lines and installation of electrical equipment is expected to cost another $24 million. A French banking firm is reported to be financing the project.

Mexico's Federal Electricity Commission is sponsoring the project, officially titled Project Hilroelectrico El Infiernillo. Their engineers designed it and a Mexican firm, Ingenieros Civiles Asociados SA, is the contractor.

USSR Starts First Unit At Irtysh Hydro Plant

Russia's Bukhtarminskaya power station has begun delivering power in the Altay mountain region. First of its nine hydroelectric generating units went on the line in the plant that ultimately will deliver 675,000 kw. The station is the second of 16 planned for the Irtysh River.

The Bukhtarminskaya reservoir is claimed to rank after Kariba as the second largest man-made lake in the world. It is said to be 370 miles long and 9 to 12 miles wide and to have a capacity of some 43 million acre-ft.

Reports claim that the new reservoir will improve transportation between the Soviet Union and Northwest China, making it possible to ship from China through western Siberia into the Arctic Ocean.

Plans are in the works for the third Irtysh River plant, the Shulbinskaya Station. The Ust Kamenogorsk station, also part of the plan, has been in operation for seven years.

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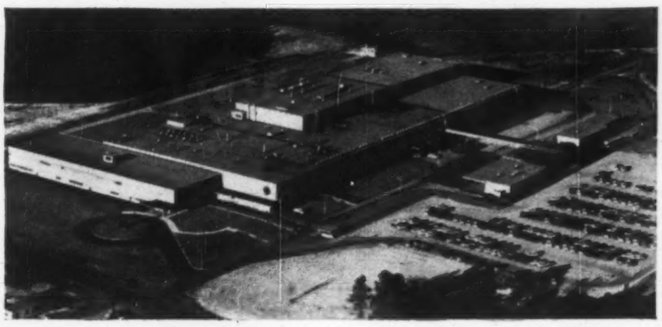
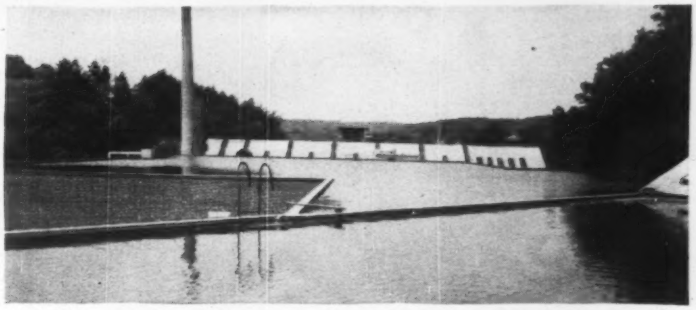


IN BUILT-UP ROOFS

that last a lifetime



A roof is a roof is a roof, you say? Not so, for though built-up roofing materials may *look* alike, there's a vast difference in their performance. • Only coal tar pitch has the ability to heal any small cracks and checks in built-up roofs. And coal tar has been proved the best waterproofing agent known; it's the *only* material ever used for ponded roofs. • Perhaps the final proof of superiority is that Koppers Bonded Roofs have consistently outlived their warranty periods, giving their owners long life with minimum maintenance costs. • If you're planning, designing, or constructing buildings, consider flat, built-up roofing using Koppers Coal Tar Pitch. Its slightly higher initial investment is repaid over a building's life. Your Koppers roofing specialist can explain how and why.

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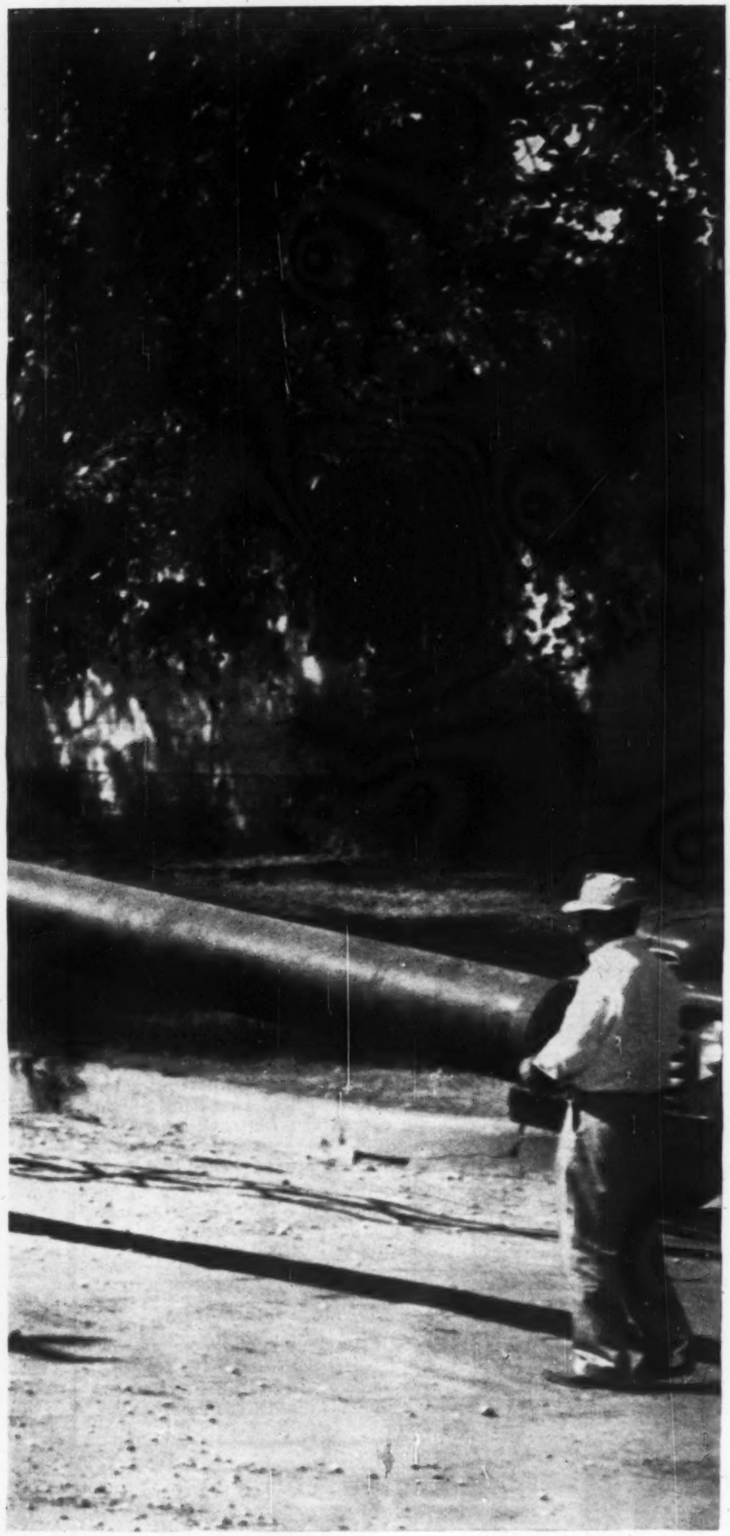

GOES TO BED WITH ITS WORKING CLOTHES ON

From the moment it is installed, cast iron pipe begins working—will deliver its full flow of water for over a century.

Here in Kansas, as part of a major water expansion program, 15,000 feet of cast iron pipe were put to bed. Ease of assembly, bottle-tight joints, and assured full-flow capacity through cement lining were important factors in the selection of cast iron pipe.

An interesting feature was the uncovering of distribution mains constructed of cast iron pipe manufactured in 1887. The pipe was in excellent condition and was put back in water service.

Cast iron pipe is always working. In fact, once it is installed, one can generally anticipate no major repairs or replacements for at least a century.

CAST IRON PIPE RESEARCH ASSOCIATION,
Thos. F. Wolfe, Managing Director,
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ALPHA

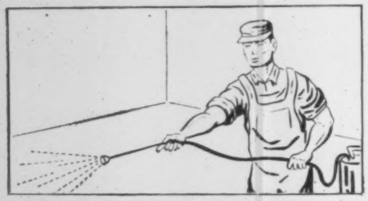
BETTER CONSTRUCTION THROUGH BETTER USE OF CEMENTS

news and notes from the field

Tips on Finishing Air-Entrained Concrete

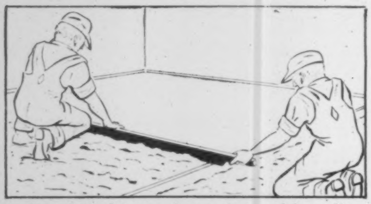
Concrete made with air-entraining cements differs from regular or non-air-entrained concrete in that it contains millions of minute, completely separated air bubbles. It was developed to produce concrete that would resist the effects of freezing and thawing. It also improves workability; results in less bleeding or surface water; less segregation; and has less tendency to dust when steel trowel finished.

Steel trowel finishing of air-entrained concrete requires slightly different techniques to prevent pulling or tearing of the concrete surface. To determine these specific differences, Alpha engineers, with the assistance of experienced finishers, ran a series of practical tests. These conclusions resulted:

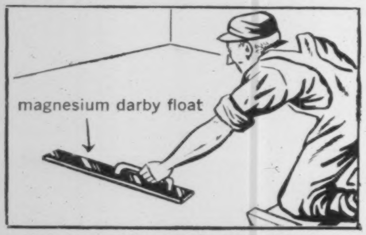


1. Moisten the grade to prevent absorption of water from the mix.

2. Wheel, shovel or chute mix into place—do not flow.

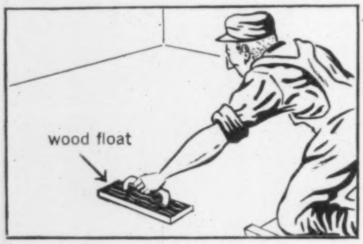


3. Level and tamp into place with strike-off screed.

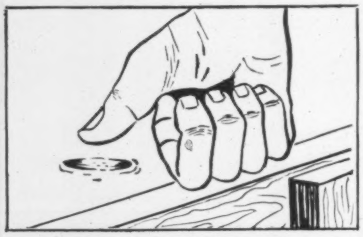


4. Delay wood floating for 30 to 40 minutes after the concrete is placed. If stickiness appears when wood floating is started substitute a magnesium darby float—use sparingly and in a flatter position than for regular mixes.

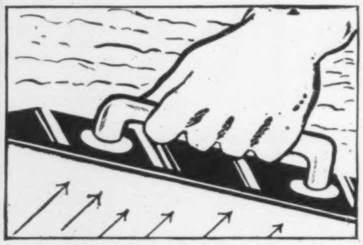
...or



4-a. If the wood float is used, steel trowel sparingly in about 10 to 20 minutes after the wood floating is completed. Don't overtrowel. If stickiness appears, delay troweling for 15 or 20 minutes or until stickiness disappears.



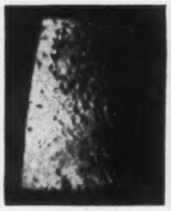
5. Give final steel troweling when thumb pressure barely dents the concrete surface.



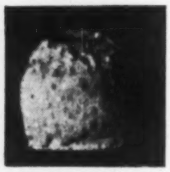
6. Final troweling compacts the surface, leaves it smooth. The trowel produces a ringing sound but not as noticeable as with regular mixes.

7. Start curing as soon as possible without marring the surface. Use waterproof paper, curing compounds, wet burlap or ponding with water.

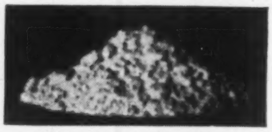
A Stiff Mix is Easier to Finish



Good if vibration is used.



Maximum slump for air-entrained concrete.



Too wet—will make air-entrained concrete sticky.

Don't use a wetter mix than is necessary for satisfactory workability. New mixes should always be tested before use on jobs because air-entraining cements and admixtures perform differently with different materials.

There is no great difference in finishing air-entrained concrete compared to regular mixes except that care must be taken not to overtrowel concrete in the early stages. This causes tearing and stickiness. A stiff mix is much easier to finish than a wet one. The air bubbles in the concrete impede the passage of fines and water to the surface so there is less danger of dusting caused by overtroweling or overfloating. However, there is more danger of a soft surface if the curing step is not carried out. Alpha experiments proved that when considerable pressure is used in the final steel troweling, a harder wearing surface will result.

More Information

Write for a copy of the Alpha Craftsmanship in Concrete folder: "Steel Trowel Finishing Air-Entrained Concrete".

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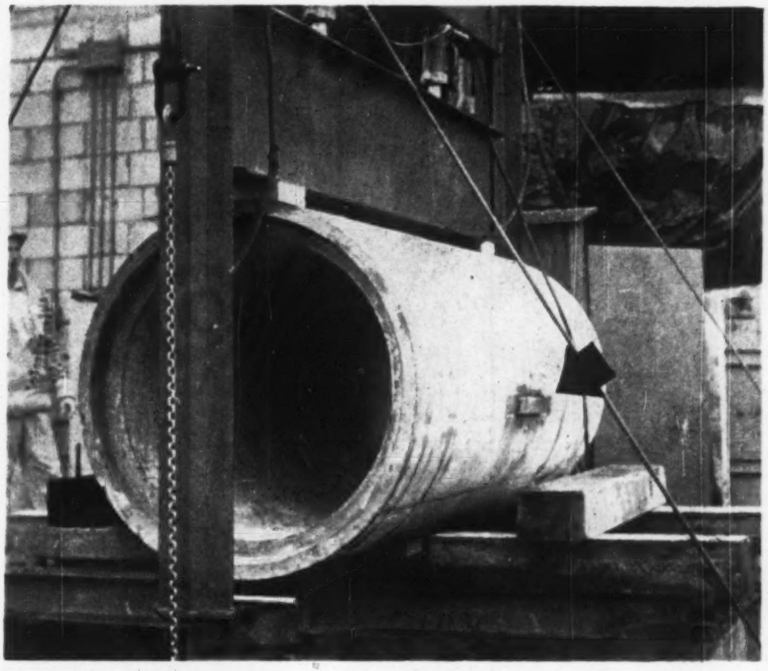
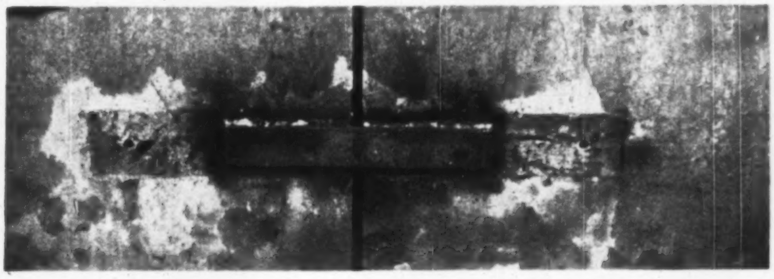


Welded Concrete Pipe Lengths?



Steel Straps Are the Answer

Reinforced concrete pipe lengths can be welded together using a method that has recently been devised in Canada. It facilitates the handling of pipe in long lengths.

The surfaces welded on the 36-in.-dia test sections were 3x12x⅜-in. steel plates located at the quarter points at the ends of the pipe. Steel hooks fastened the plates to the reinforcing cages before concrete was placed. The plates were flush with the outer surface of the finished pipe.

Adjacent pipe sections were joined by lining up the plates and welding a 2x12x⅜-in. strap across the joint (arrow in photo) at each matching pair of embedded plates.

The method was developed by Evans, Coleman & Evans, Ltd., of Vancouver, B. C. This firm, in conjunction with the Vancouver Department of Sewer Construction, also conducted strength tests on two 4-ft-long sections of 36-in. pipe which had been united by the new method.

The pipes were assembled with a rubber gasket, then drawn up tight and welded together. The assembly was laid horizontally on a single center support 6 in. square. Load was applied vertically downward at each end on top through 6-in.-square blocks.

The first sign of cracking occurred at a load of 72,000 lb, when fine hairline cracks appeared radiating from the embedded plate on top. At 98,000 lb, the crack widened to slightly more than 0.01 in.

The tests indicate that a safety factor of four to one is assured when four eight-foot sections are joined in this manner and are handled and laid as one 32-ft-long section of pipe.

Testing Society Charts Work Program on Soils

Committee D-18 on Soils for Engineering Purposes, American Society for Testing Materials, lists 25 problems on its current program, including a number of topics of particular interest in construction:

- A cone-penetration test method of the Canadian Standards Association and a vane-shear test method of the U. S. Bureau of Reclamation are under review for possible incorporation into existing ASTM standards or adoption as new standards.
- Test methods are being developed for maximum and minimum density of granular soils.
- Research is under way to get the necessary technical data for developing test methods for capillarity and permeability of soils.
- The widely-used California Bearing Ratio test method will be recognized as an ASTM standard, subject to letter ballot of the full committee.
- A test method for density of soil in place by a rubber balloon method will be recognized, subject to letter ballot.
- Several items relating to plate loading tests will be studied.
- A test method for measuring load capacity of batter pile frames, submitted by the U.S. Navy's Bureau of Yards and Docks, has been approved by a subcommittee and will go to the parent committee.
- Research problems relating to pile tests include stress conditioning and pile deformation under load, load distribution in side shear and point bearing, stress distribution in the soil mass surrounding a pile, and bearing capacity and the action of piles under shock loading.

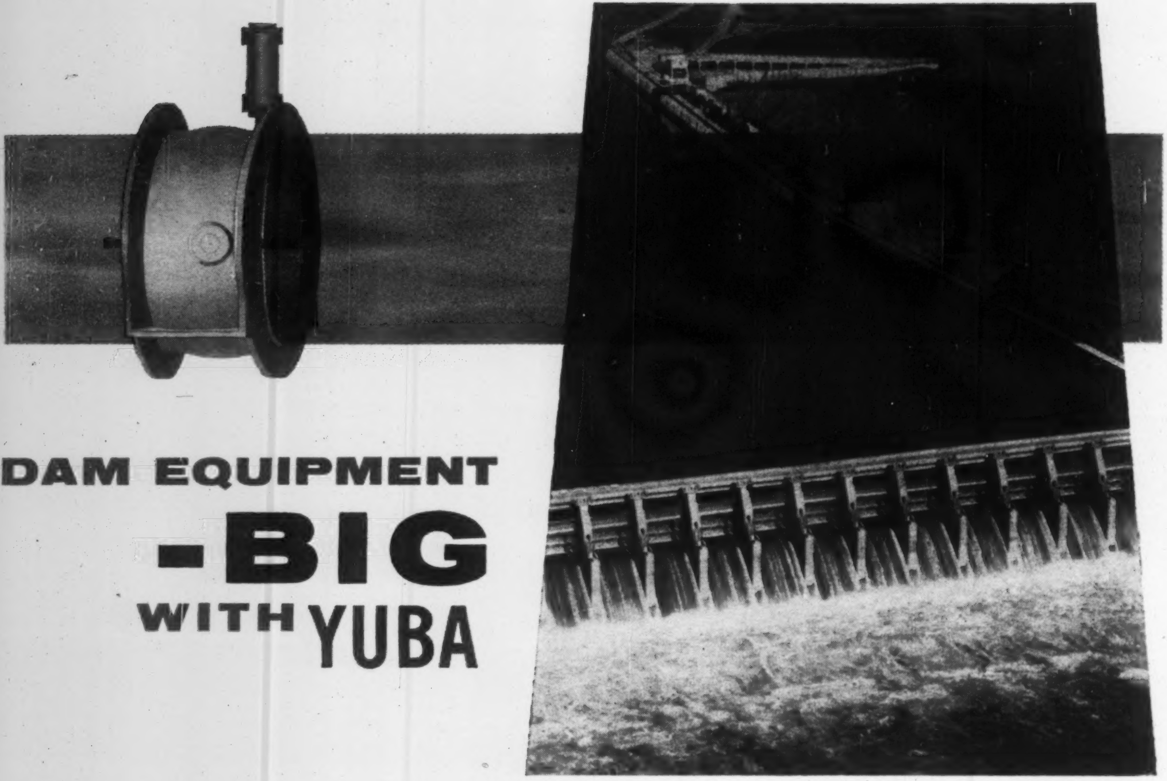
Dissolved Oxygen Content Boosted With Compressor

A simple method for raising the dissolved oxygen content of badly polluted or stagnant pond water is reported from Sweden. Compressed air introduced through a perforated plastic pipe is said to have raised the oxygen content of a small lake from near-zero to 57% within three weeks.

In the same three-week period the 22F temperature differential between the surface and lake bottom disappeared.

An 8-hp compressor supplied the air.

A drawback to the method is that hydrogen sulfide, present in the lower layers of stagnant ponds, may be brought to the surface by the bubbling action.



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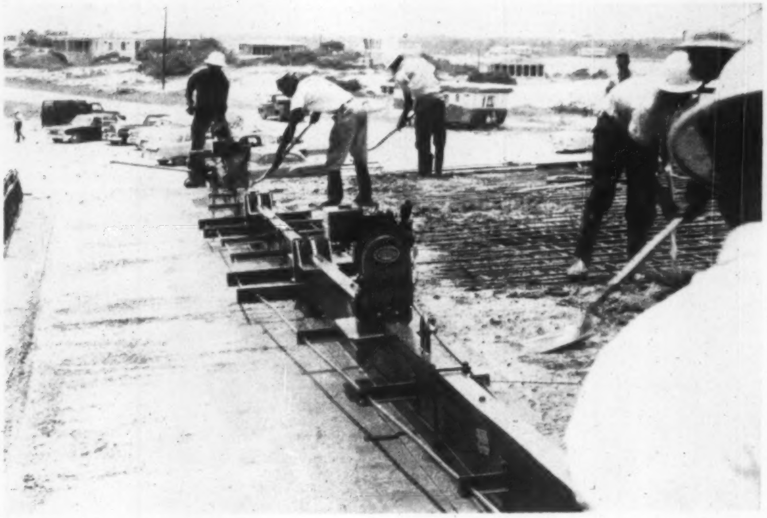

Long Screed Is Fully Adjustable

The DF vibrating screed is available in any length from 8 to 50 ft and is adjustable along its length to any desired crown.

A 2½-hp power unit mounted on the screed beam has adjustable amplitude. Any desired amplitude can be obtained by turning the eccentric on its axis, using dial settings marked on the pulley, and locking it in position with set screws. This is said to assure maximum efficiency of vibration regardless of the mix.

The wooden screed beam has 3-in.-wide steel flanges on either side. The flanges can be raised up or down at points along the length by bolts to correct for beam deflections and provide a crown. A parabolic crown or slope can be cut into the beam. For long beams (over 30 ft) an adjustable hinge assembly is included in the center of the beam to provide additional crowning and permit shipment of the beam in two sections. For beams 40 ft and over, tie rods are used to prevent the screed from "bowing out" when in use.

Heavy duty roller assemblies support the screed beam at each end. A lever is provided to lower both rollers, thus raising the beam up off the slab so that it can be moved back if a second pass should be needed. 9:1 ratio hand winches are available and recommended for steady pull on screeds longer than 12 ft. STOW MFG. CO., 19 SHEAR ST., BINGHAMTON, N. Y.

Liquid Allows Sub-Zero Concreting

No protection is needed for concrete placed in temperatures as low as 30 deg below freezing if an additive known as Thermo-Crete is used. This claim, based on a program of laboratory and arctic region tests, is advanced by the new company that has obtained the world-wide rights to market the product.

This liquid chemical compound, now known as Thermo-Crete, was originally developed about 20 years ago, and more than a million gallons of it has been used as a waterproofing agent under the name of Pyramid. It had also shown good results as an accelerator and hardener of concrete.

High concrete strengths had been attributed to its use, but its properties as an anti-freeze compound had not been suspected until about mid-1959. The extensive series of tests then undertaken led to the formation of a company to market the product for this service, as well as for waterproofing and as an accelerator and hardener. It is also being examined as a heatproofing compound, with the idea that it can be used to protect airport pavements from jet blasts.

Thermo-Crete is water soluble, and is claimed to improve workability while promoting normal hydration within the concrete at either high or low temperatures. It is easily handled, and no special mixing equipment is required. It may be added at the mixing plant or the job site. THERMO-CRETE CORP., 426 S. SPRING ST., LOS ANGELES, CALIF.

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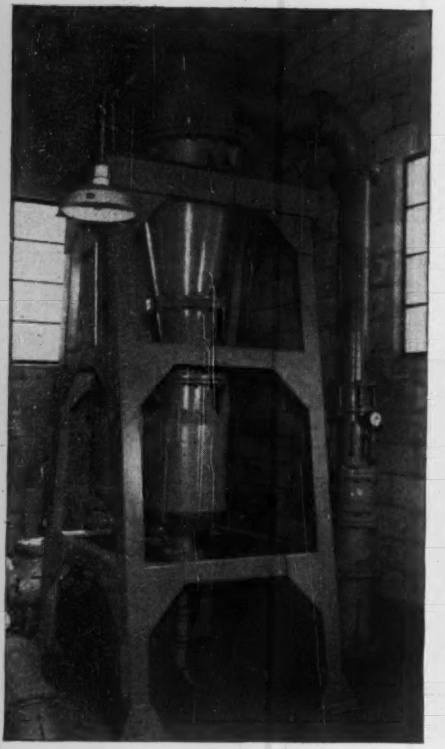

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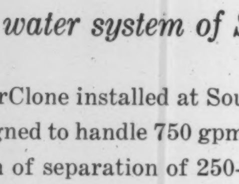

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Adjustable Boom Length Increases Hoe Efficiency

A variable length hoe attachment allows the operator to select the best boom length, giving 13 ft of variation on a ¾-yd hoe. Maximum boom length is 23 ft, minimum 10 ft.

The variable length boom feature allows a ¾ yd machine to dig 10 ft of level floor at 20-ft depth with maximum digging depth 23 ft. An average basement can be dug with as few as four sets of the machine. According to the manufacturer, job efficiency is markedly increased by the variable boom. BURG MANUFACTURING CO., WAVERLY, NEB.

Plastic Waterstop Allows Expansion Without Stress

Seal-Tight waterstop, extruded from two different PVC compounds, provides a high bond to concrete and allows expansion without stressing the material.

Plastic in the center area combines strength with maximum flexibility while multiple rib areas on each side are of a high strength, rigid plastic. The waterstop handles expansion mechanically without stretching the center area or stressing the multiple-rib area. It is done with a U-bulb center shape that will expand mechanically up to 1½ in.

The opening in the U-bulb is protected by a thin membrane to prevent concrete paste from entering the bulb during casting. Under load, this membrane is designed to tear, providing for the wide joint expansion. The maker states that a test joint expanded to 1½ in. withstood a 215-ft head of water without leaking.

Ribs are upset toward the joint faces, providing greater holding power, strength and rigidity. The manufacturer says this way they won't compress, shear or pull off. W. R. MEADOWS, INC., 26 KIMBALL ST., ELGIN, ILL.

(*New Products continued p. 80*)

!! HERE !!

THE GREATEST SHOW ON WO

'61 CHEVROLET STURDI-BILT TRUCKS

JUST OUT !!JUST THE WAY YOU W

CHEVROLET
THIS WA
TO THE TRU

ORTH !!!

WANT 'EM!

PROVED WORTH MORE BECAUSE THEY WORK MORE

1961 Chevrolet trucks roll in on a wave of owner acclaim!

Sure enough, a gigantic advance in truck design has shortened every route in America. It began just a year ago, when the first Torsion-Spring Chevy nosed out onto a highway. With a vastly different truck design, featuring torsion-bar independent front suspension, this totally new Chevy was a big winner right from the start. Thanks to its amazing bump-cushioning ability, it did just about everything better. Got more work done in a day, for instance, with a floating ride that all but assured faster schedules on any roads. Slashed maintenance with a jolt-free ride that drastically reduced wear on truck components. Owner's earning power began to soar and word got around. This one caught on fast. So fast, in fact, that there are now, already, *nearly 300,000* Torsion-Spring Chevies putting out this new kind of working ability on tough jobs all over America. It's been a giant step forward in trucking and it's only the beginning. *Because, here for 1961, are Chevrolet trucks with even more of the worth-more, work-more performance that's won such wide owner acclaim over the past year*. Even more strength, even more stamina—and an even wider range of models. Look 'em over here—see how a Torsion-Spring Chevy can smooth out that rough hauling job of yours . . .

1961 Chevrolet light-duty t

MORE MODELS!★★
MORE WAYS TO SA

New worth-more picku
panels, Suburban Carry
Step-Vans, forward con
and chassis-cabs ★ W
proved Torsion-Spring R
★ 3 new go-anywhere 4-w
drive models ★ Famous
saving Thriftmaster
Tough, short-stroke Tra
master V8 ★ Roomy, rug
Comfort-King cabs
Spacious bodies that c
more cargo ★ Big, s
Torque-Action brake
Brawny box-section fra
big-capacity axles!

*All series except K10, K20,
P30.

BRIGHTON
CHEVROLET
50

1961 Chevrolet heavy-duty trucks

MORE MIGHT!★★★★★★ MORE EARNING POWER!

51 mountain-moving heavyweights ★ Choice of Conventional, tilt or Low Cab Forward models ★ Tough Torsion-Spring Ride ★ Best-built big-tonnage V8's going ★ G.V.W.'s up to 36,000 lbs., G.C.W.'s up to 51,000 lbs. ★ Massive K- and X-braced frames ★ Advanced Eaton-Hendrickson tandem units ★ Rugged rear axles up to 18,500 lbs. in capacity ★ High-capacity variable-rate rear springs!

ty trucks
★★★★
SAVE!

ckups,
arryalls,
controls
Work-
g Ride*
4-wheel
us gas-
er 6 ★
Trade-
rugged
abs ★
t carry
, safe
akes ★
frames,

20, P20,

1961 Chevrolet medium-duty trucks

MORE WORTH! ★★★★★
MORE WORKING ABILITY!

88 big-saving models to choose from ★ Owner-acclaimed Torsion-Spring Ride ★ Big Comfort-King cabs ★ Sure-saving Jobmaster 6 power ★ Durable Taskmaster V8 power ★ Easy-wheeling Low-Cab-Forward models ★ Big-payload Chevrolet tilt cab trucks ★ Work-saving Powermatic transmission ★ Sturdy-built frames and axles!

CHEVROLET
70

MORE MIGHT! MORE MODELS! MORE WAYS TO SAVE! NEW CHEVROLET TRUCKS FOR '61!

They're worth more than ever before because they'll *work* more than ever before! Here's Chevy for '61 with a longer line of models, extra strength and stamina . . . even more of the smooth, tough performance that's won high praise from truckers all over America!

PICK FROM 189 MODELS! More models than ever before—work-proved dollar savers in every weight class! 1961 Chevies for every hauling chore in the book include three new long-wheelbase 4-wheel-drive models, sturdy Stepside and Fleetside pickups, spacious panels, versatile Suburban Carryalls, handy Step-Vans and forward controls, tough chassis-cabs of all sizes, mountain-moving tandems. Somewhere in this long, *long* line you're sure to find the one truck that makes the most sense on your job!

OWNER-PROVED TORSION-SPRING RIDE! It puts an end to I-beam axle shimmy! Independently suspended front wheels step right over bumps, tough torsion bar springs soak up jolts. New smoothness improves virtually every phase of performance; speeds up schedules, cuts truck wear and maintenance expense, reduces cargo damage and driver fatigue! Owners report that there's never been anything like it for high-profit hauling—and it's *standard* on every 1961 Chevrolet model, except Forward Controls and 4-wheel drives!

STRONG, ROOMY CABS THAT HELP BOOST YOUR WORK OUTPUT! Rangy drivers ride in comfort with stretch-out room in all directions. Extra hip room, shoulder room, leg room and head room. Seeing is safe and easy through a whopping-big wraparound windshield. The seat's a beauty, too—a full 59½" wide with a spring combination inside that gives just the right support. (And for the last word in working comfort, special 6" foam rubber padding is optional at extra cost.) And these cabs are *rugged*, with a build that includes all-steel construction, double-panel roof, double-walled cowl housing and box-section door pillars.

TOUGH TRUCK CHASSIS—BRAWNY BASIS FOR BIGGER PROFITS. The best sellers have never been huskier, starting with the massive, truck-built frames that add stamina to every chassis. In medium- and heavy-duty models, rugged self-adjusting variable-rate rear springs help smooth out big-tonnage hauls. Quality features galore boost truck life in every Chevrolet truck for '61. Extra-big brakes give faster, surer stops and last longer. Precision wheel balance makes steering easier, lengthens tire life. Smooth, durable Synchro-Mesh transmissions come in sizes to suit all types of duty.

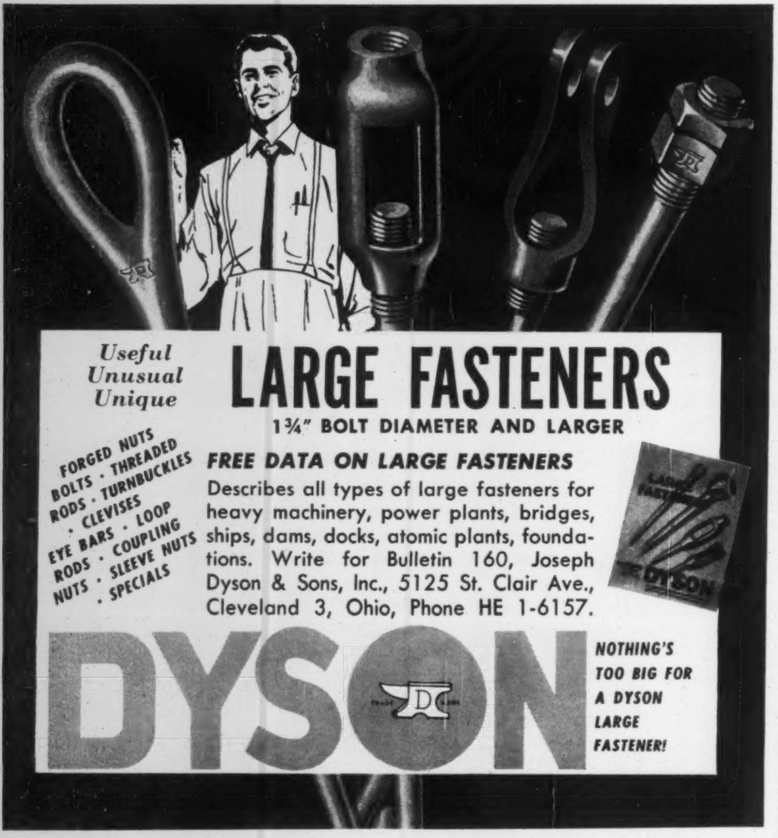
ENGINES WITH PROVED EARNING POWER. Famous sixes that out-sell all others because they're best at brightening cost records . . . big V8's that lead the industry for short-stroke design and hard-working durability! Chevy for '61 offers a *long* line of power plants to meet the special needs of every weight class. They're money-making specialists, designed to hammer down high costs in tough truck duty.

The truth is, we could fill every page in this magazine with reasons why Chevrolet trucks have never been better than they are for '61, but there's no need for that. Not when your Chevrolet dealer can boil it all down for you so quickly and pleasantly. See him soon and start saving soon! . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

Member of the ATA Foundation, Inc., American Trucking Industry

1961 CHEVROLET STURDI-BILT TRUCKS

CHEVROLET



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Unique

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1¾" BOLT DIAMETER AND LARGER

FORGED NUTS
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· CLEVISES
EYE BARS · LOOP
RODS · COUPLING
NUTS · SLEEVE NUTS
· SPECIALS

FREE DATA ON LARGE FASTENERS

Describes all types of large fasteners for heavy machinery, power plants, bridges, ships, dams, docks, atomic plants, foundations. Write for Bulletin 160, Joseph Dyson & Sons, Inc., 5125 St. Clair Ave., Cleveland 3, Ohio, Phone HE 1-6157.

DYSON

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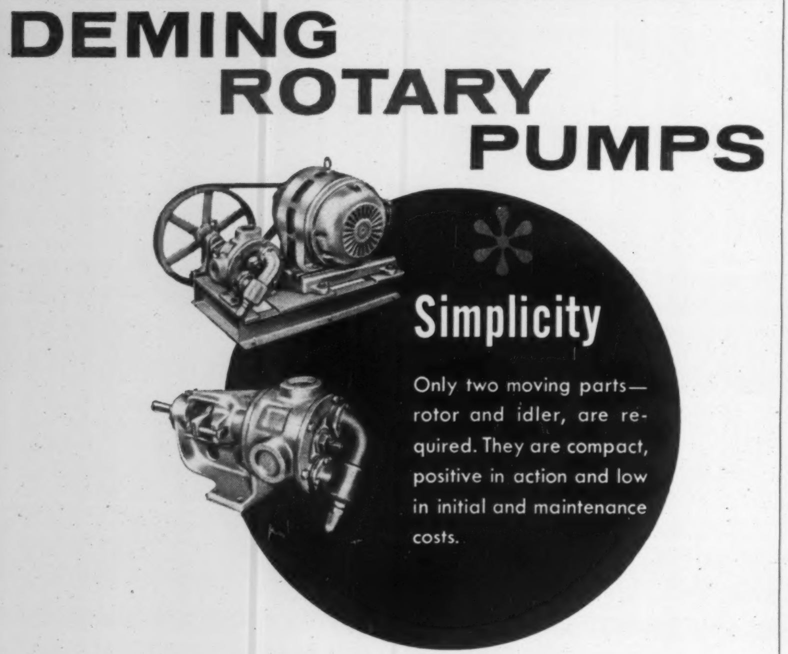

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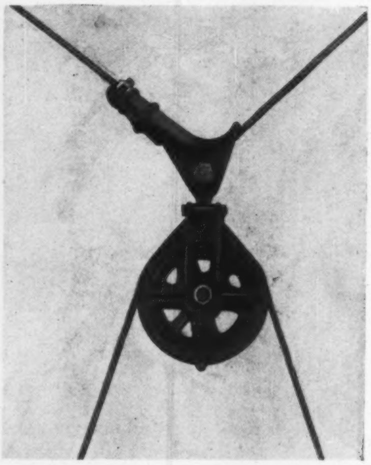

Wedge Clamp Makes Fast Connection to Cable

A wedge-type clamp fitting provides fast, secure attachment to a bridle cable.

The three-part fitting comprises a saddle-shaped wedge clamp, a wedge and a cable clip. A wire-rope block, or other means of load transfer, attaches to a pin connection on the clamp.

The bridle-hitch clamp comes in two sizes—for ⅝-in. and ¾-in. wire rope. SAUERMAN BROS., INC., 632 S. 28TH AVE., BELLWOOD, ILL.

Blasting Agent Delivered Ready to Load Into Holes

Du Pont has introduced a blasting agent called Nilite 101. It is considerably more sensitive to propagation than prill/oil mixtures, says the maker, but is still much safer to use than any type of dynamite and does not have to be stored in a bulletproof magazine.

Among advantages cited by the manufacturer, Nilite 101 is not dusty, resists caking in storage, requires no mixing on the job and flows freely. It can be poured straight from the bag into the hole, the maker says, and will fill the entire cross section of holes as small as 2 in. in diameter.

The performance of the product reportedly equals that of 60% extra dynamite on a weight basis. It gives good breakage in medium-hard rock, says du Pont. Breakage that can be expected is said to range from 1 lb per ft for a 2-in. hole to 19 lb per ft for a 9-in. hole. Priming at 10 to 15-ft intervals is recommended by the manufacturer.

Nilite 101 comes in 50-lb multiwall paper bags. E. I. DU PONT DE NEMOURS & Co., WILMINGTON 98, DEL.

(New Products continued p. 82)

Pierce Island Bridge, Portsmouth, N. H.

NEW GRANCO *S-I-P* BRIDGE FORMS STAY IN PLACE

Look easy? It *is* easy. And practical, too. Permanent, galvanized S-I-P (*Stay-In-Place*) steel forms for concrete bridge floors. No wood forms to remove. No shoring. No special tools. No safety nets or scaffolds required. All the work is done from above. S-I-P Bridge Forms fit between stringers. The minute they are set in place, you have a solid working deck, ready for reinforcing steel and concrete. Think of the construction time you save. Granco S-I-P Bridge Forms are available now. Want more information? Just mail coupon.

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"There is hardly anything in the world that someone cannot make a little worse and sell a little cheaper—and the people who consider price alone are this man's lawful prey."

—*John Ruskin*

you can buy a cheaper engine... but you can't buy a better one

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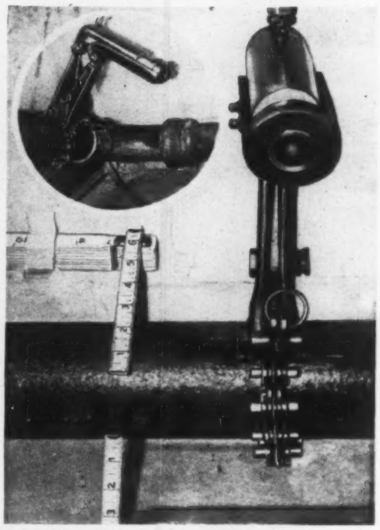


Hydraulic Pipe Cutter Offers Easy Operation

A pipe cutter that operates hydraulically is designed to handle 2-in. and 3-in. cast iron water main and 8-in. standard and heavy soil pipe.

Its use in close quarters and on overhead installations is particularly recommended by the maker. The hydraulic pump is designed for safe, easy operation at a distance from the actual cutting location.

The device is said to be lightweight and compact, requiring no special adjustment. The chain is wrapped around the pipe and the nearest chain pin is engaged in the jaws. The pump is then operated until the cut is complete.

The cutter is supplied with enough chain to handle 2-in. through 8-in. pipe. Additional chain may be added to extend the capacity up through 15-in. clay tile or terra cotta pipe. WHEELER MANUFACTURING CORP., 71 Ross RD., ASHTABULA, OHIO.

Cat Truck Engine Has 220-hp Turbocharged Unit

The model 1673 diesel truck engine is a six cylinder, four cycle turbocharged and aftercooled power plant of 4.5-in. bore and 5.5-in. stroke. It is designed for trucks with gross vehicle weights of 26,000 lb or more, or gross combined weights of 50,000 to 75,000 lb. The engine is rated at 220 hp at 2,200 rpm.

According to the manufacturer, economical operation and maintenance result from the engine's precombustion chamber design. The engine is similar to the one used in some models of the company's construction equipment. CATERPILLAR TRACTOR CO., ENGINE DIVISION, PEORIA, ILL.

Busiest Plant in the Business

keeps concrete-hungry pavers on the go . . .

Working high-production pavers? Keep 'em in mix with a Johnson Automaster-C. This highly portable cement batch plant moves in and sets up fast. And you can relocate it in short order to keep ahead of paving work. All parts of the plant package are preassembled into compact, easy traveling packages. Simple plug-in connections eliminate complex field wiring hookups.

. . . moves up to 360 batches per hour

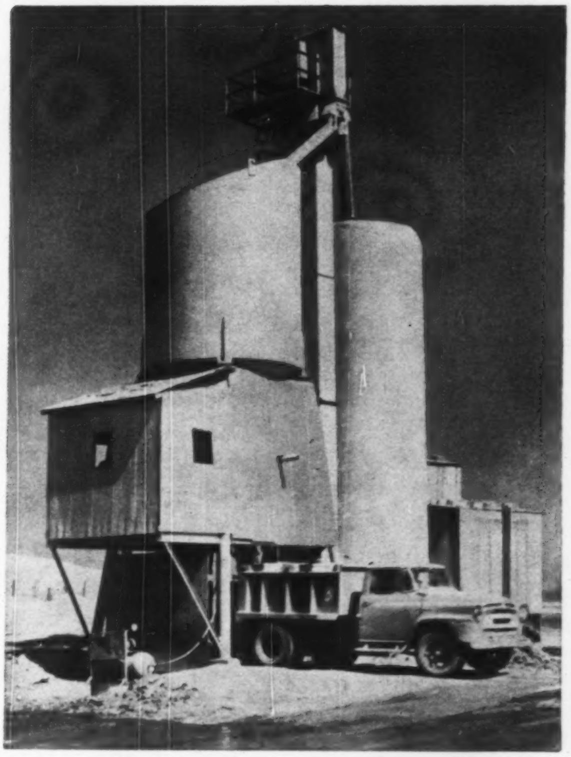
Automaster-C has 1560 cu. ft. of overhead cement storage. Auxiliary ground silos are available in a wide range of capacities. Take you choice of one or two 14 cu. ft. cement batchers. Single batcher weighs out up to 180 batches per hour . . . dual batchers up to 360. Batch size: 1½ cu. yds. for each batcher.

. . . be prepared to bid on any job

To meet U.S. Engineer specifications, batching equipment can be furnished with dial scales, 12-mix selector system, graphic pen recording, time and date stamp, interlocks, and aggregate moisture compensating beams. Ask your Johnson distributor for details.

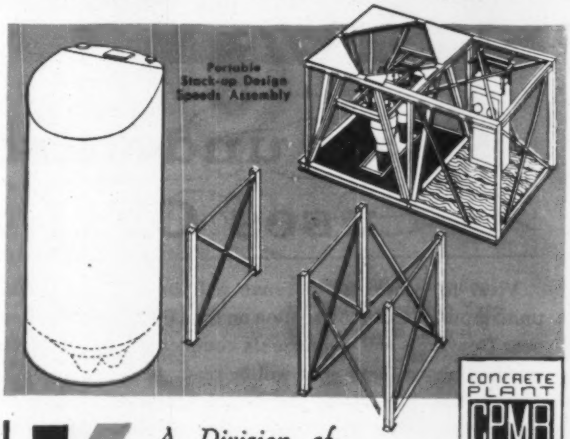
J6

C. S. JOHNSON
COMPANY
Champaign, Ill., Stockton, Calif.



JOHNSON Automaster-C

Portable cement batch plant



CONCRETE PLANT CPMB MANUFACTURERS BUREAU

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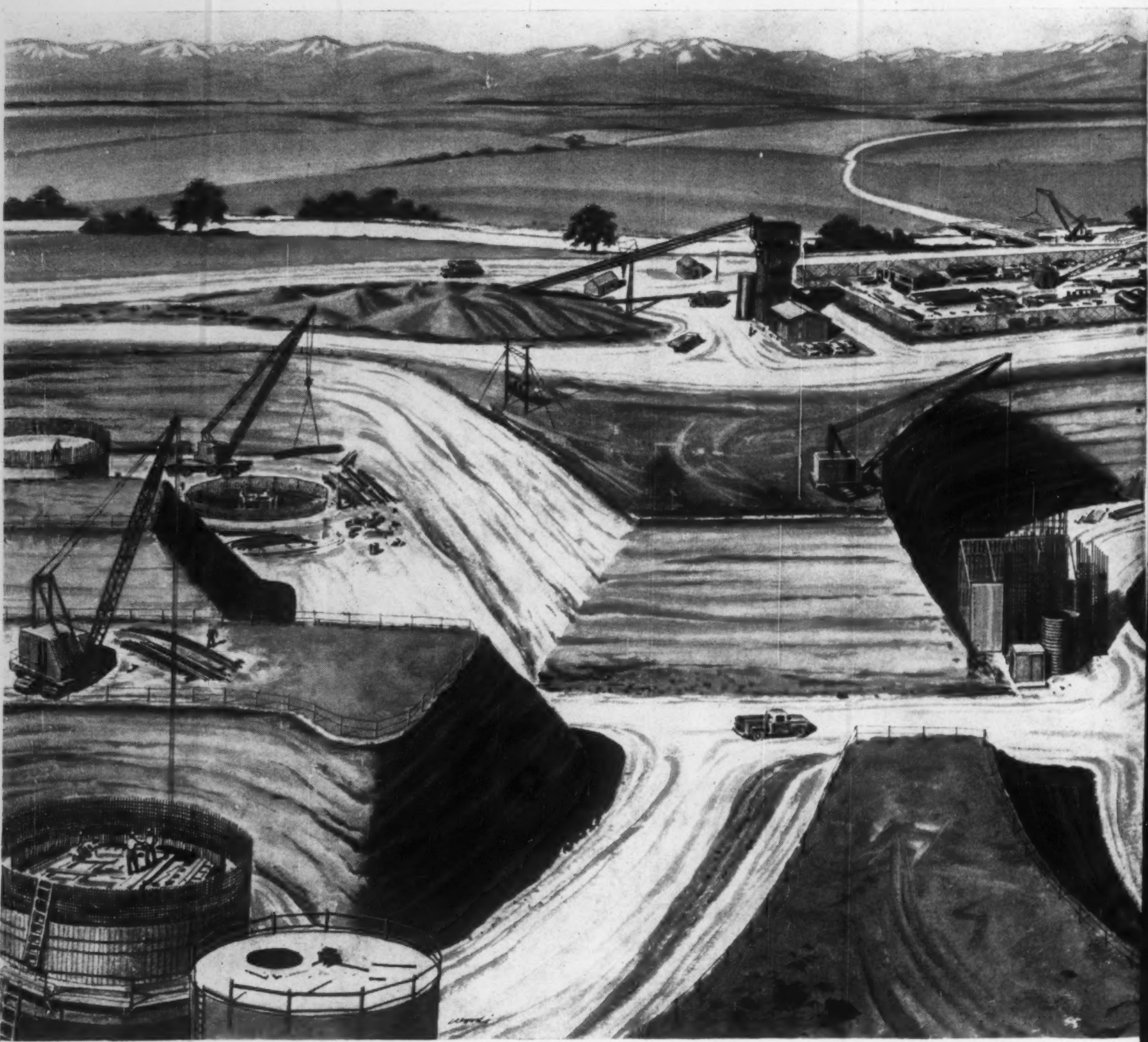


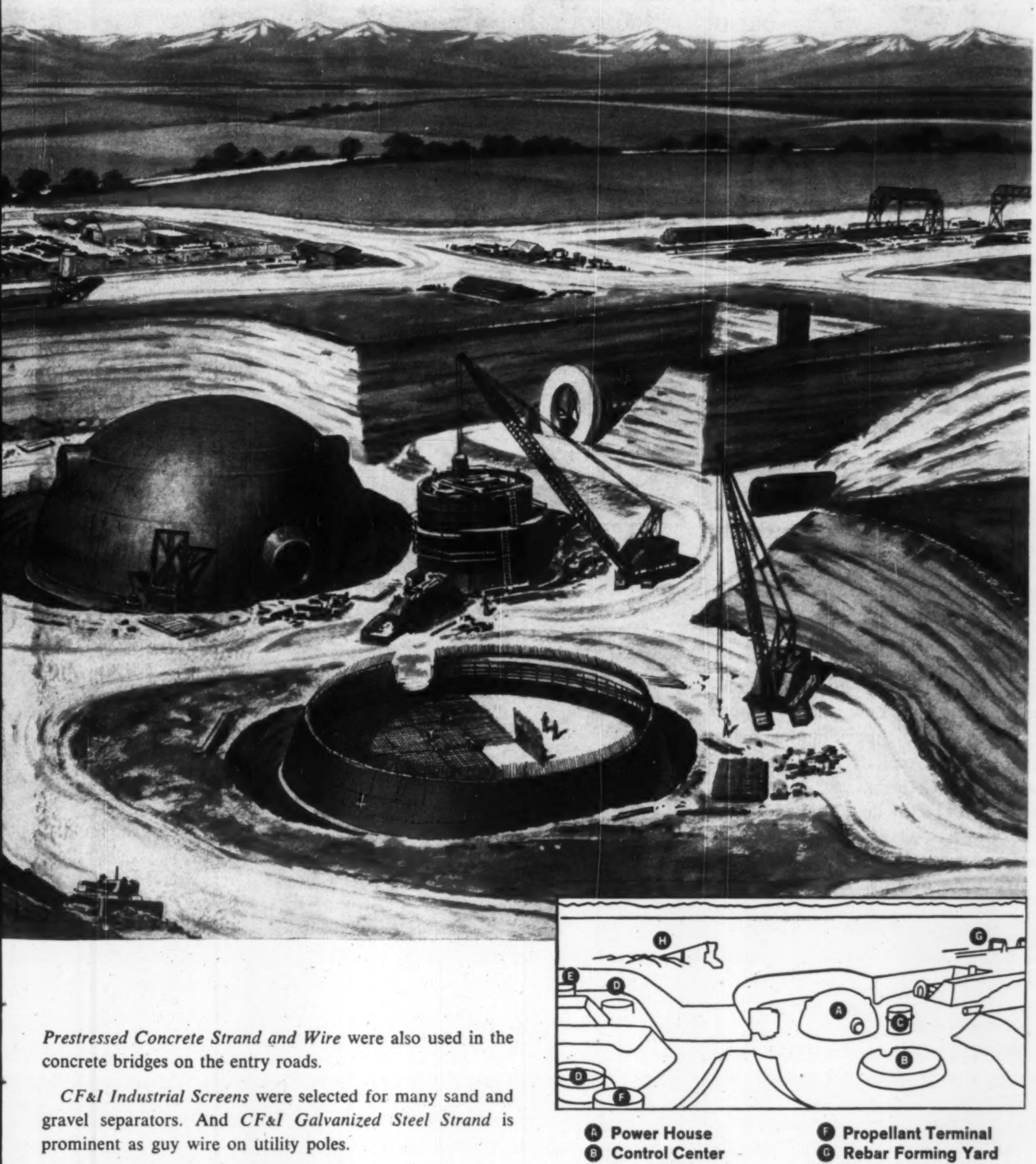
Titan underground missile base uses CF&I Steel Products

Vital to America's defense will be this completely-underground ICBM installation on the Lowry Bombing Range near Denver. It will comprise six complexes—one of which is pictured above—and each will be ready to fire three 98-foot long Titans. In building the complexes, which will occupy 875 square miles, the Corps of Engineers has used a variety of CF&I Steel Products — products known for their dependability.

CF&I Grader Blades and Cutting Edges gouged out huge excavations in which the installation will be buried. Thousands of tons of *CF&I Reinforcing Bars* fortify most of the concrete structures, including the launching silos and support installations. *Cal-Tie Wire,* in handy dispensers, was used to tie the rebars together.

Throughout the project, *CF&I-Wickwire Wire Ropes* were chosen for cranes, steam shovels and hoists, because these ropes have extra-high breaking strength and provide longer service life. *Realock Fence* and *CF&I Field Fence* guard the excavations and police "off limits" areas.

CF&I-Clinton Welded Wire Fabric was specified to give an additional steel backbone to many concrete structures, making them as "shock proof" as possible. The bases of the powerhouse and control center are further reinforced with *CF&I Hard Drawn Prestressed Concrete Wire for Redrawing. CF&I*



Prestressed Concrete Strand and Wire were also used in the concrete bridges on the entry roads.

CF&I Industrial Screens were selected for many sand and gravel separators. And *CF&I Galvanized Steel Strand* is prominent as guy wire on utility poles.

Whenever technical information is required on any product, CF&I engineers are ready to assist you. This service is available to all our customers. For full details about any CF&I product, call our nearest sales office.

- Ⓐ **Power House**
- Ⓑ **Control Center**
- Ⓒ **Portal Silo**
- Ⓓ **Launching Silos**
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- Ⓕ **Propellant Terminal**
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- Ⓗ **Sand and Gravel Quarry, Concrete Batching Plant**

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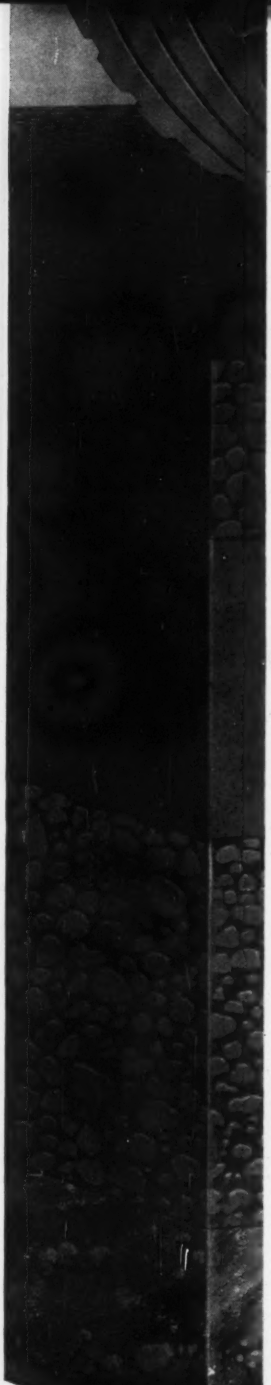
CF&I STEEL

OKLAHOMA PROJECT I-205 (5) Interstate Route 40

Oklahoma builds to last...with "DEEP-STRENGTH" Asphalt pavement



- **Hot-mixed—hot-laid Asphalt base promises outstanding service life.**
- **Design overcomes problems of plastic subsoil and short aggregate supply.**

Down in Oklahoma, they've just completed a beauty . . . a new *Deep-Strength* Asphalt pavement that includes many features of The Asphalt Institute's Advanced Design Criteria.

And it won't be the last. That's for sure.

Just take a look at the construction (right) and cross section (below). Notice that precepts of new *Deep-Strength* Asphalt design are incorporated...heavy-duty Asphalt concrete surface course . . . heavy-duty Asphalt base . . . Asphalt primed subbase . . . wide double-sealed Asphalt shoulders (on Asphalt base) . . . heavy compaction . . . good drainage.

When designed like this — for *Deep-Strength* . . . Asphalt pavements will carry the heaviest traffic loads without distress . . . with minimum maintenance cost. Witness the New Jersey Turnpike. Witness also *Deep-Strength* Asphalt city pavements built more than 60 years ago and still in service.

Save money, too

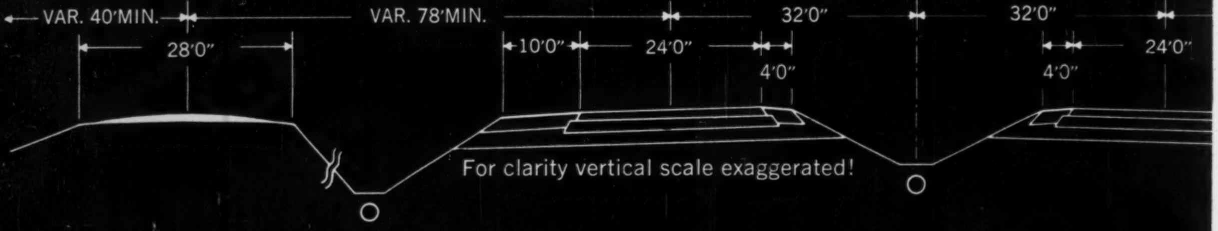
Surprising as it seems at first glance, modern low-maintenance, *Deep-Strength* Asphalt pavements often cost less to build than Asphalt pavements designed to other standards. That's because the **Advanced Design Criteria** permit inexpensive Asphalt base to be substituted, within limits, for the more expensive Asphalt concrete surfacing. And also because total pavement thickness can often be reduced by several inches.

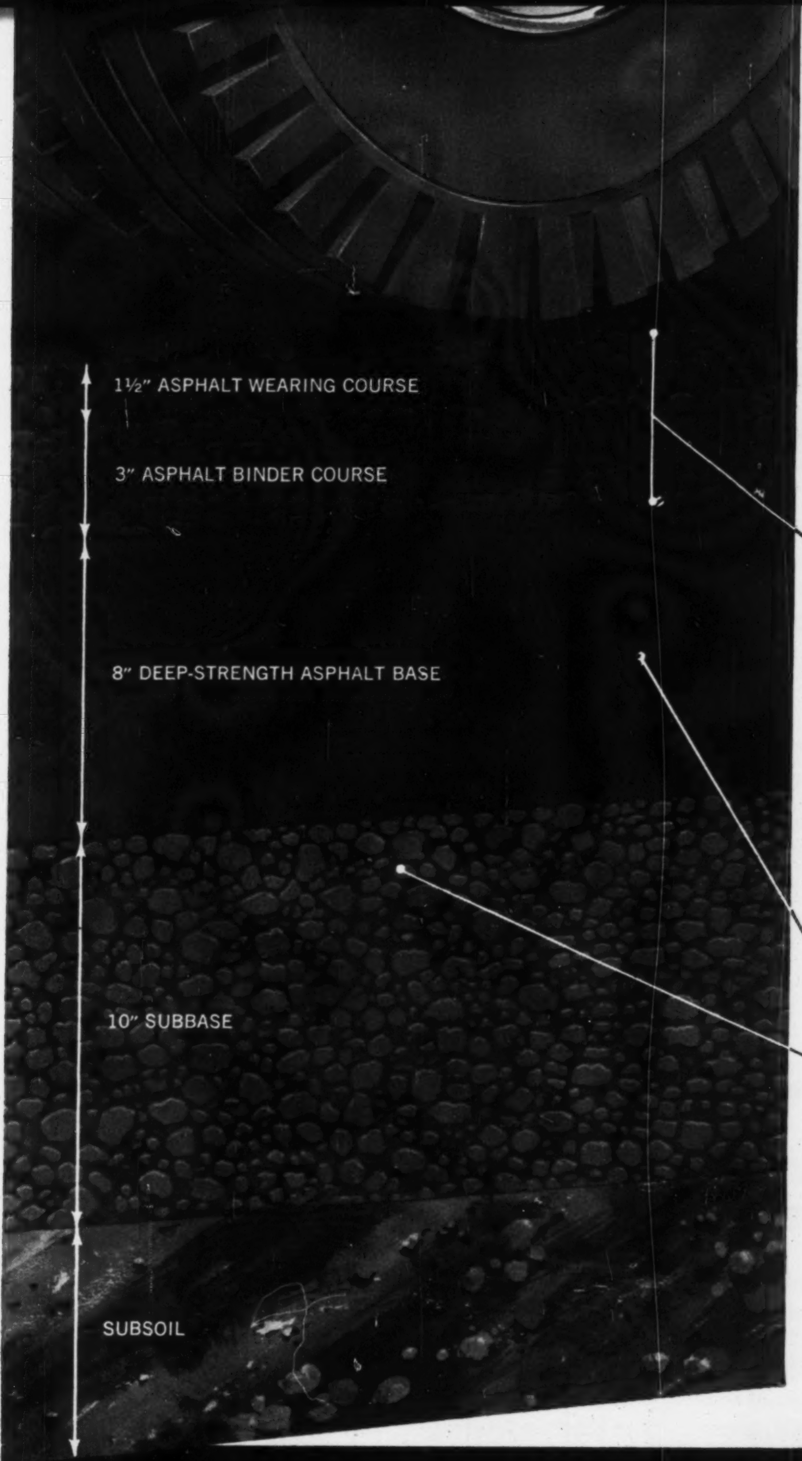
No de-icing damage

In addition, important savings in maintenance result when roads and bridge decks are Asphalt surfaced. Asphalt pavement does not deteriorate from de-icing salts. That's one reason why Maryland and Massachusetts are using Asphalt surface for all new bridge decks.

AND SAFER — snow and ice melt faster — higher skid resistance.

DEPRESSED MEDIANS ASSIST FREE DRAINING. Note also the Asphalt shoulder construction. These two measures alone can substantially

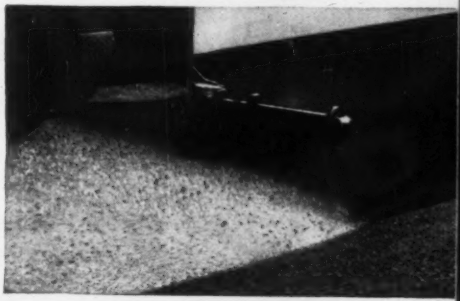



1½" ASPHALT WEARING COURSE
3" ASPHALT BINDER COURSE
8" DEEP-STRENGTH ASPHALT BASE
10" SUBBASE
SUBSOIL

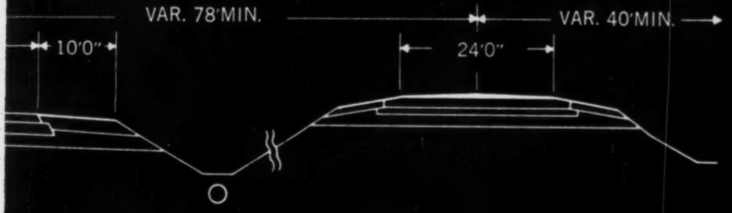
4½-INCH ASPHALT CONCRETE SURFACE takes heaviest traffic, deicing salts without distress. Lane markings show up better day or night, wet or dry.

8-INCH SAND-ASPHALT BASE provides Deep-Strength . . . excludes moisture, insures smoother riding surface under heaviest traffic.

ASPHALT PRIME COAT SEALS SUBBASE . . . insures bond with overlying Asphalt base.



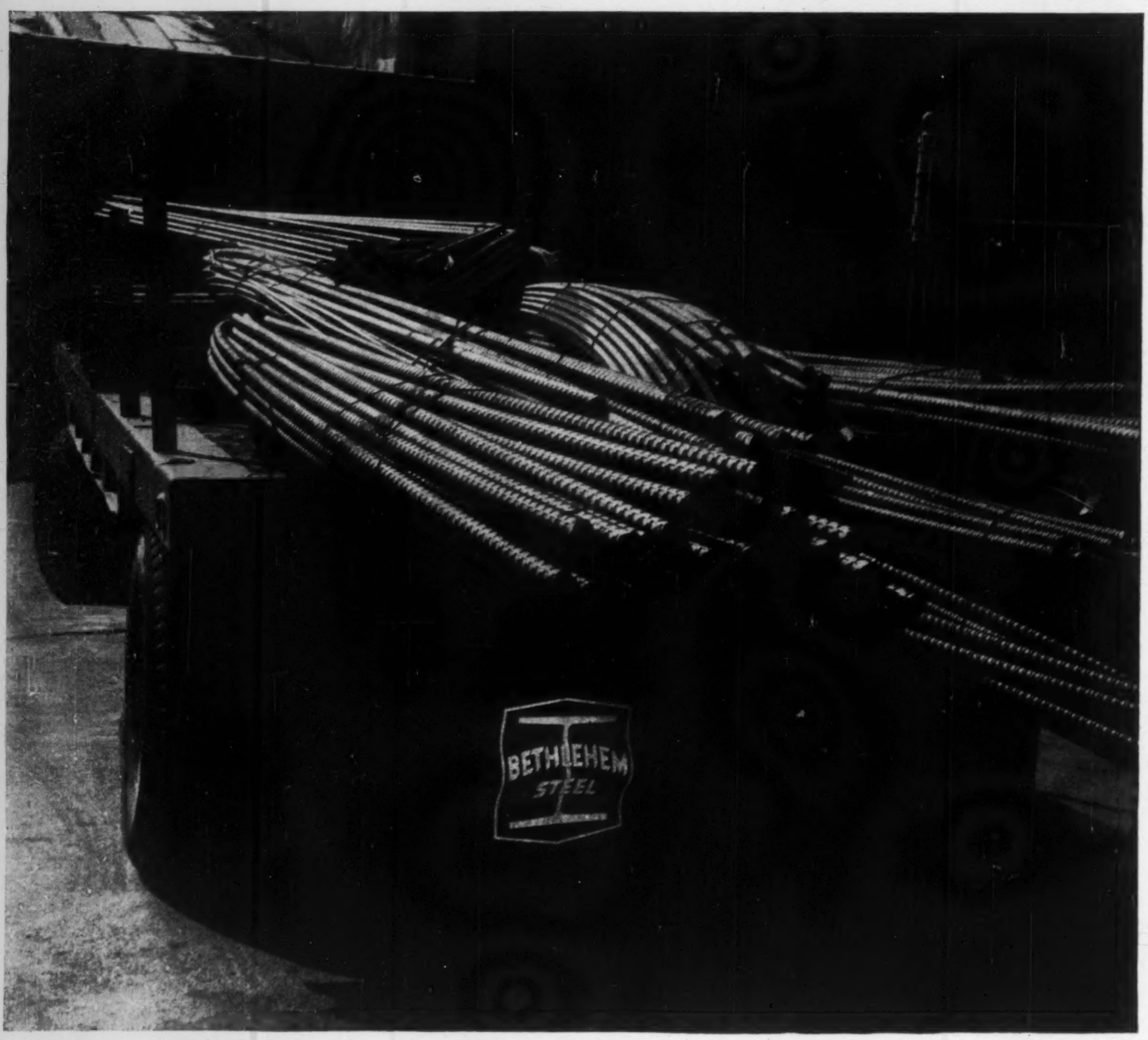
lengthen pavement life.


VAR. 78'MIN.
VAR. 40'MIN.
10'0"
24'0"

Ribbons of velvet smoothness . . .
ASPHALT-paved Interstate Highways.

DEEP-STRENGTH

THE ASPHALT INSTITUTE
Asphalt Institute Building, College Park, Maryland



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NEW BILLET-STEEL BARS WITH A PEDIGREE

When bundles of Bethlehem reinforcing bars are delivered at a job site, they have a known history. Certified mill test reports, furnished by Bethlehem, are matched with heat numbers by which the bundles of bars are identified. When you buy Bethlehem bars you are assured of composition, mechanical, and physical properties fully meeting all requirements of ASTM Billet-Steel Bar Specifications—a certified pedigree.

Bethlehem supplies a complete line of billet-steel reinforcing bars, including the extra-large sizes 14S and 18S, in all standard grades. Special grades are also available.

Bar fabricating is our specialty, whether you need a hundred tons or ten thousand. For accurate fabrication, well-executed placing plans, and prompt delivery to your job site, order Bethlehem Reinforcing Bars.

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Steel
for Strength
... Economy
... Versatility

BETHLEHEM STEEL

Highway Engineer J. C. Womack (seated) and Deputy Engineers Waite, Trask and Murphy direct . . .

California's King-Size Highway Agency

According to popular legend, walking is so uncommon in California that anyone afoot on the street there after 10 p.m. is liable to be arrested as a vagrant.

True or not, California does have the world's heaviest concentration of motor vehicles, approximately one automobile, truck or bus for every two of its 15.5 million citizens. Because of this and because the state has a comparatively small amount of railroad track mileage, rubber-tired transportation is as vital to Californians as food and shelter.

As a result, California has the country's largest state highway organization. California's 14,000-man Division of Highways–7,000 of them engineers–works today with a budget of $460 million to pay for construction and rights of way for highways to serve the state's eight million registered vehicles.

California has the largest highway construction budget of any state and gets the largest share of Interstate highway money, 10% of yearly allocations. In the Los Angeles metropolitan area alone, the division spends about $157 million a year on rights of way and construction. This is more than many states spend on their entire highway programs.

Entering this year's construction season, California had 2,147 miles of multilane divided highway in operation and another 235 miles under construction. The state's completed freeways add up to 800 miles.

The division, an arm of the state's Department of Public Works, grew to giant size almost overnight. Thirteen years ago, for instance, the division's budget was $78 million and its staff only 7,000. Fewer than four million automobiles, trucks and buses were on California's highways.

Highway work in California has a diversity that matches its size. Engineers have to build to accommodate high mountain passes, flooding rivers, swampland, and, reputedly, the world's heaviest traffic. In various parts of the state temperatures go as low as 45 deg below zero and as high as 125 above. Some areas have the country's heaviest rainfall and in others winter snows pile up hundreds of inches deep.

California carries out nation-wide recruitment campaigns to meet these challenges of size and environment. Through a combination of good pay, job security and interesting work, the state has been able to hire and hold some of the country's ablest civil engineers.

Salaries for junior civil engineers start at $530 a month and the range through the next eight grades to state highway engineer at $1,707. The entire division, including the state highway engineer, J. C. Womack, is included in civil service.

One of the greatest attractions of the division for bright CE graduates is the division's reputation for doing all of its own engineering work. A steady source of funds for highway construction make this possible. Most of the country's highway departments farm out design jobs to consultants during peak load periods.

Promotions are made on the basis of competitive examinations. State policy calls for the appointment to higher positions of those who pass exams instead of hiring persons from outside state service. High level positions are filled almost exclusively from within. The division encourages in-service training and demands professional registration of members above associate engineer.

Under Mr. Womack the division works to eliminate much of the mathematical drudgery that long has been a part of civil engineering. Centralized electronic computers reduce to a minimum laborious calculations of areas, earthwork quantities and traverses. Photogrammetry is used extensively.

The division recently reorganized its headquarters and engineering functions, the first major revision since 1947, to adapt to the increased size and complexity resulting from the expanded federal highway program.

California's governor appoints the director of Public Works, Robert B. Bradford, Mr. Womack's superior. Under Mr. Womack are three deputy state highway engineers:

J. W. Trask, who was recently promoted from the post of assistant state highway engineer, is in charge of planning, which includes advance planning, traffic, planning survey, programs and budget, and right of way.

J. P. Murphy, deputy for operations, is responsible for the functions of construction, maintenance, equipment and materials, research, and bridges.

Charles E. Waite, in charge of administration, handles the departments of administration, accounting, and personnel and public information and the offices under these departments.

The new organizational setup continues a trend toward decentralization of authority and responsibilities. The state's 11 districts carry out most of the division's program, except for bridge construction and planning. District engineers report to the state highway engineer.

A third deputy state highway engineer and a stronger planning section were needed, Mr. Womack says, because of the increase in planning for metropolitan freeway systems.

California, he says, is the first state to have an official long-range master plan for a statewide network of limited access highways. Gov. Edmund G. Brown last year signed legislation establishing a 12,400-mile California Freeway-Expressway system. Unless there is a change in existing highway construction financing, California will spend $10.5 billion in freeway and expressway work during the next 20 years.

The system includes 10,800 miles of highways already under state jurisdiction and 1,600 miles of streets and roads maintained by cities and counties or roads not yet built.

"The construction emphasis continues to be on the development of full freeways," says Mr. Womack. "Experience with various highway designs in California and elsewhere has repeatedly shown that freeways carry more traffic with greater safety than any other type of highway. Unlike other highways, the capacity of freeways is not reduced by the development of roadside businesses and subdivisions."

The division of highways hasn't been operating free of criticism over the years. Bitter fights often mark the selection of freeway routes. San Francisco rebeled against construction of any more freeways within its limits (ENR Feb. 12, 1959, p. 28).

For all of California's highway construction, the state's system doesn't lend itself to tollroad construction. The only tolls charged in the state are over three existing bridges. Tolls will also be charged over one bridge under construction and another about to be built.

"We build what they want."

The state legislature frequently has asked for feasibility studies of tollroads, but the reports always come out negative. Studies indicate that California motorists wouldn't use tollroads as long as free roads still exist, no matter how bad these roads might be. An important factor in this is that California is a terminal state, rather than a corridor state. Few motorists pass through on their way to another state.

"We're here to build what they want us to build," says Mr. Womack.

The state engineer and his three aides Mr. Waite, Mr. Murphy and Mr. Trask, can boast of a thorough background in California highway work. Among them the four men have a total state service of 120 years. Behind them is an echelon of younger men, assistant state highway engineers in their late forties and early fifties, groomed to take charge when the top men retire.

The whole group, young and old, share the feeling that California has the country's best highway agency.

"Frequently we have gotten pats on the back," Mr. Womack admits modestly. "We have a very good relationship with people affected by our highway program, locally and on the Washington level.

"I honestly feel that whatever success California has enjoyed is due to a state legislature assuring a continuity of funds; no pork barrel interference; and a good civil service."

Flood Control Staff Shifted

Three key members of the New York State Flood Control Commission have been transferred to the State Department of Public Works in a move that marks the end of the commission's existence after almost 25 years as the state agency for the federal flood control program.

Horace S. Evans, former executive director of the Flood Control Commission, is appointed to the newly created post of executive director for flood control in the Department of Public Works.

Transferred with Mr. Evans are Alan Robinson, administrative assistant, and Mrs. Elsa R. Butman, chief clerk.

The Flood Control Commission expired at the beginning of this month under Governor Nelson A. Rockefeller's plan for consolidation of state functions with respect to water resources under the State Water Resources Commission. Responsibility for flood control operations, function and duties has been assigned to the Department of Public Works by the Water Resources Commission, which is comprised of the heads of the departments of conservation, public works, law, health, and agriculture and markets. Conservation Commissioner Harold G. Wilm is chairman.

A native of Salt Lake City and a graduate of the University of Utah, Mr. Evans has been administrative head of the Flood Control Commission since its inception in 1936. Under his leadership the commission undertook a program of 90 projects representing a federal-state investment of $250 million. The Department of Public Works, cooperating with the Flood Control Commission has carried out the state's actual physical and financial participation in the projects.

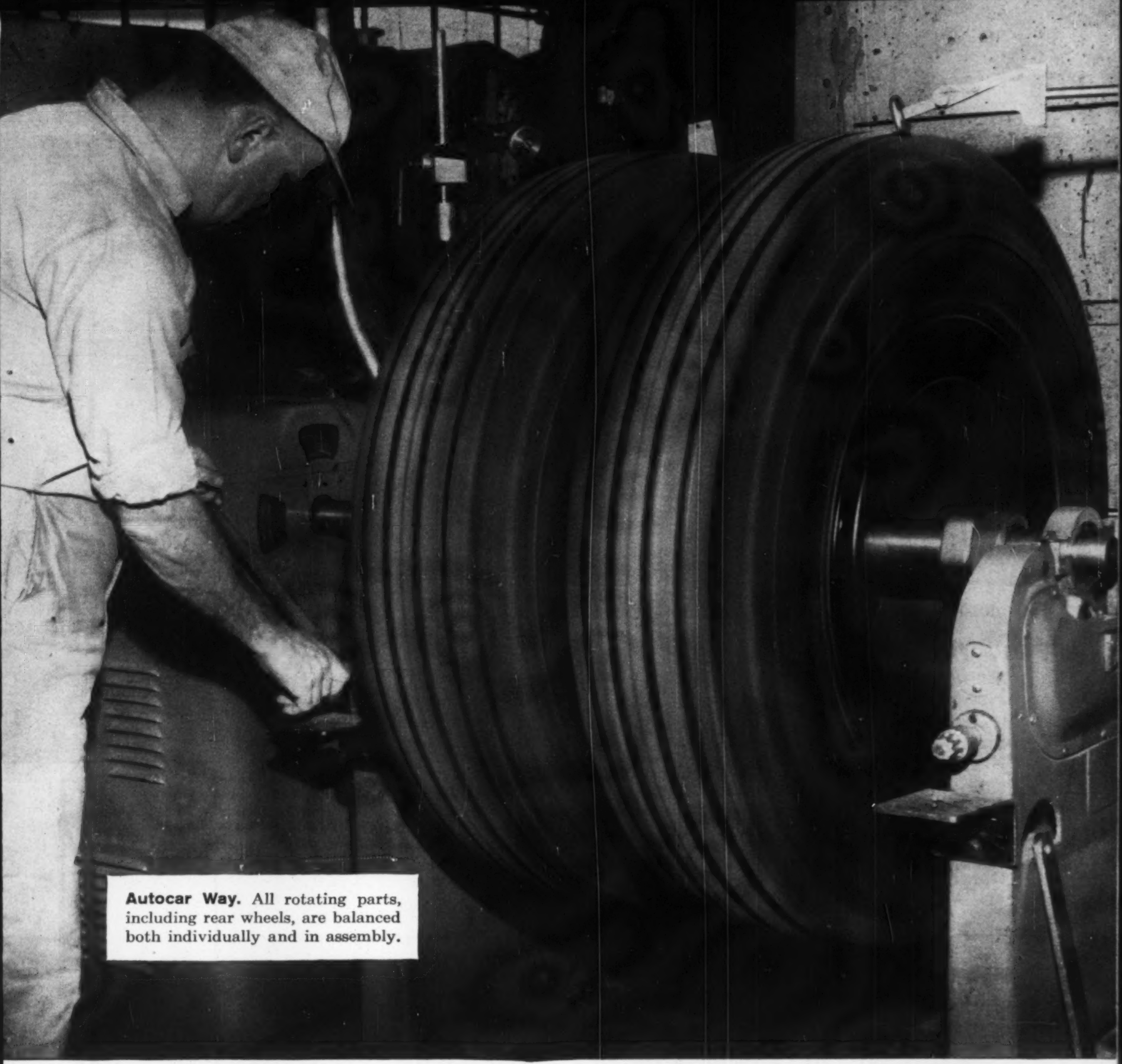
The Flood Control Commission office at 90 State St., Albany, has been closed, and Mr. Evans and his staff will be located in the Gov. Alfred E. Smith State Office Building, Albany.

Maryland Sets Review Of All Road Design

Chairman John B. Funk of the Maryland State Roads Commission has appointed a "Staff Committee on Road Design" to review "all design specifications" for new construction, including location.

Members of the committee include the department's chief engineer; chief of the Bureau of Traffic; research, maintenance and construction engineers; and the district engineer for the proposed project.

The move grew out of experience on a heavily traveled section of U.S. 219 in Garrett County, near Oakland, Md. The pavement began to show signs of distress almost immediately after it was opened to traffic. Traffic using the road exceeded engineers' estimates.



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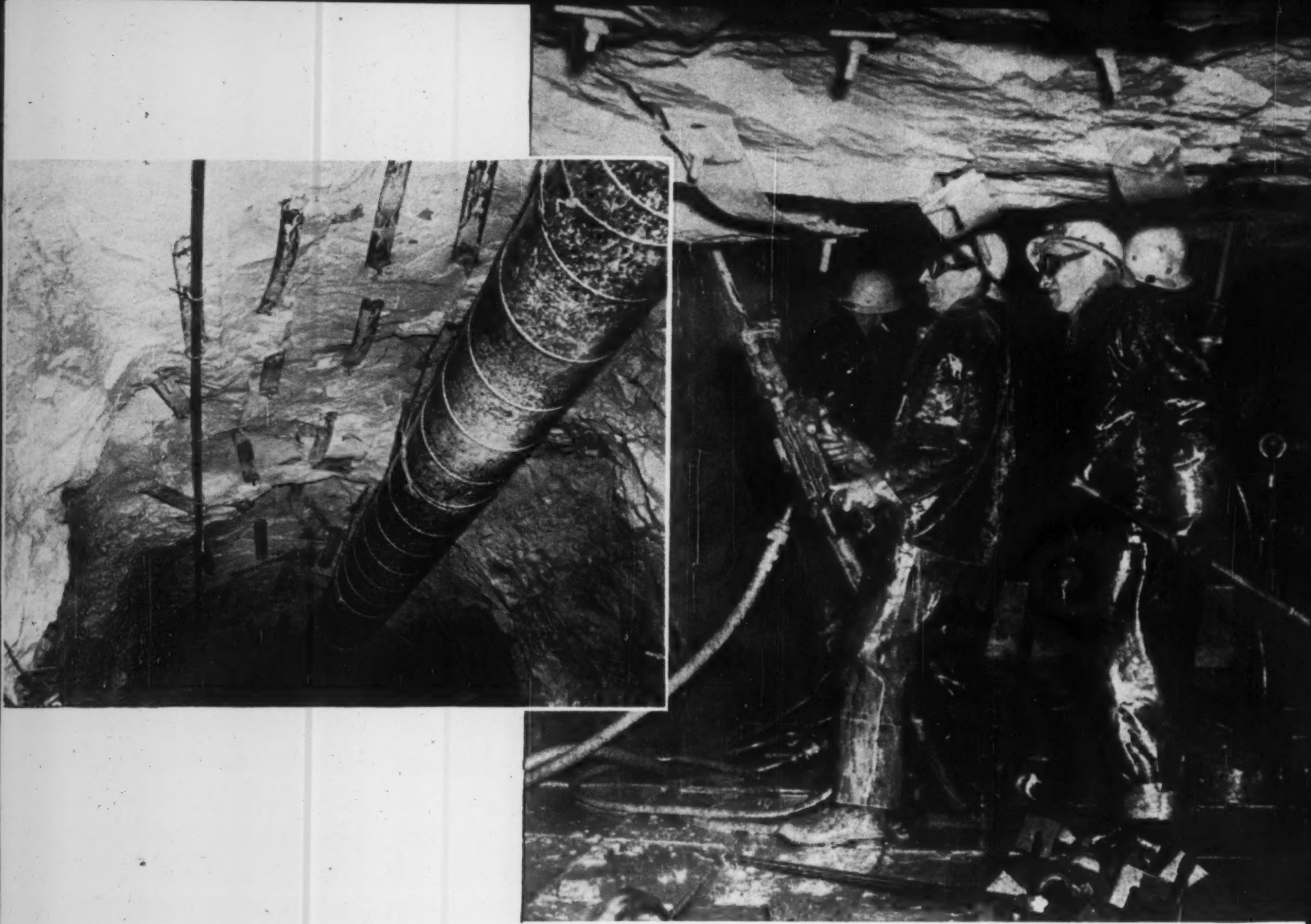
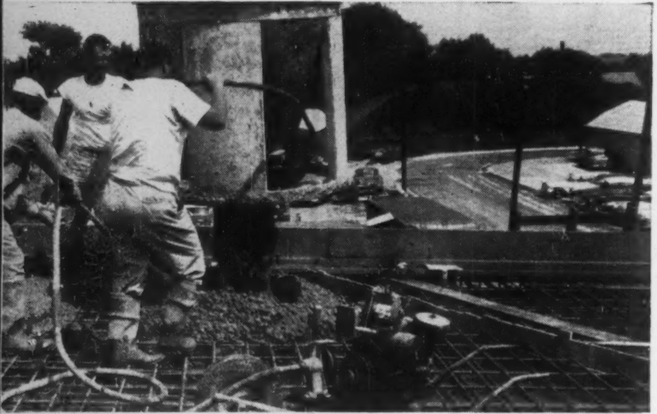


Stopper holes being drilled in the tunnel roof prior to installation of Republic Roof Bolts (photo, right). Photo at left shows tunnel with bolts in place ready for installation of concreting forms. Contractors on the West Delaware Tunnel Project included: MacLean-Grooves Co., Inc., Geo. M. Brewster & Son, Winston Bros. Co., The Conduit & Foundation Company, Grafe-Callahan Construction Co., Tecon Corp., Johnson, Drake & Pipe, Inc. Completed tunnel will connect the Cannonsville Reservoir with the Rondout Reservoir.



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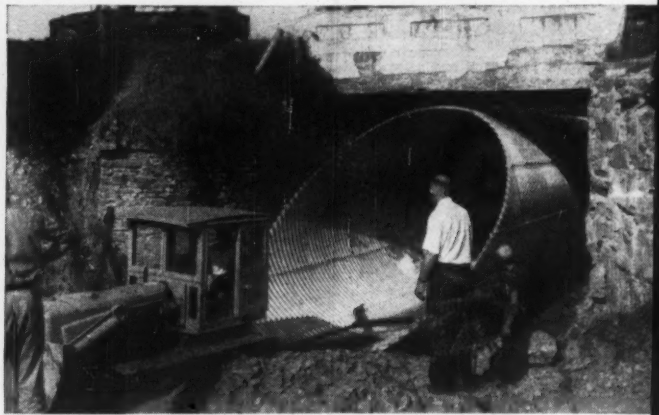

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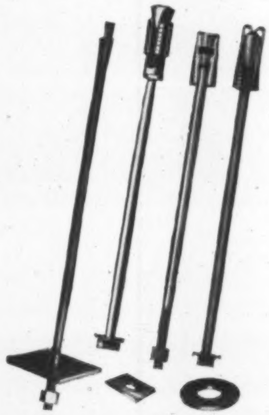

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Project engineers on New York City's 44-mile West Delaware Water Tunnel are using Republic Roof Bolts to greatly reduce tunneling time, and save taxpayers a substantial amount of money. In this, one of the first major non-mining applications* of the product, Stanley M. Dore, chief engineer of the city's Board of Water Supply, reports the Republic Bolts are providing good protection from roof falls. Arched tunnel braces are eliminated, and construction costs cut by an average of thousands of dollars per tunnel mile.

The entire roof bolting operation for each 11-foot tunneling cycle requires only one hour. Holes for the bolts are drilled and roof bolts installed from atop the drilling jumbo while the jumbo is in position for the next tunneling cycle. This makes two drilling cycles possible per 8-hour turn.

Sample tests of the bolts used in the West Delaware Tunnel show that roof bolts support a 20,000 lb. pull in hard rock. Certified performance features of Republic Roof Bolts add up to an extra margin of safety and economy.

On your present and future underground projects, it will pay to investigate Republic Roof Bolts. Republic's Field Service Team is available to work with you in selecting bolts to best meet your specific requirements. Mail the attached coupon for complete information.

**Republic Roof Bolts were successfully employed in the East Delaware Tunnel, constructed by the New York City Board of Water Supply in 1955. Experience gained in this earlier project has been carried over to the larger West Delaware Project.*

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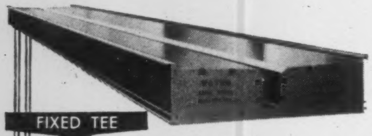

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In St. Augustine, Fla., H. E. Wolfe is . . .

The Man to See to Get Things Done

"I don't know why the governor appointed me chairman of this commission; I never read a history book in my life."

So saying, Florida construction man Herbert Edward Wolfe put aside whatever doubts he may have about his scholarly attainments and plunged into a job that more likely than not will transform the city of St. Augustine into a southern center of reconstructed historical monuments and, incidentally, a magnet for the Florida tourist trade.

And if Herb Wolfe doesn't know why he was picked for the job, the reason is not at all obscure to his fellow citizens of St. Augustine. They know Herb Wolfe is "the man to see if you want to get anything done in the city." As head of H. E. Wolfe Construction Co. and San Marco Contracting Co., as founder and president of the Exchange Bank of St. Augustine, as former mayor and as present political man-behind-the-scenes, Herb Wolfe is indeed "the man to see." Therefore, it probably never occurred to Gov. Leroy Collins to ask if Herb Wolfe was up on his history texts.

The commission Herb Wolfe now heads intends to duplicate in St. Augustine—"the first great colonial center in North America"—the program of restoration and preservation that has made Williamsburg, Va., a center of interest for historians and tourists. On his record alone, the guess is he'll have the job pretty well finished in time for St. Augustine's 400th anniversary in 1965.

The record? It includes a business career that began with one truck and grew into heavy construction, banking, farming, ranching and manufacturing; a civic career that includes important state and local offices and a basketful of participation in religious and educational activities.

All these careers are baubles resting on a solid construction base. It was in construction that Herb Wolfe got his start.

The start was one truck and a small contract hauling rock for a contractor. That was back in 1921; he was 24. Three years later he had added three more trucks to his business and an "Inc." to his name.

By World War II the company had grown to the point where it could bid on and win some $25 million in airstrip paving contracts. Today the company has 500 regular employees and a workload that frequently adds another 500 to the payroll.

During the past five years, Mr. Wolfe's companies have built 325 miles of highways in Florida under contracts totaling more than $25 million, and they have branched into highway work in Alabama, Georgia, South Carolina, Mississippi and Tennessee. (He's a director of the American Road Builders Association.) Major current jobs include two sections of Interstate in Florida and a section of the Jacksonville Expressway. Each of these jobs is $1 million plus.

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Obituaries

Chester W. Cambell Dies; Headed Foundation Co.

Chester W. Cambell, president of the Foundation Co., a New York City engineering firm, has died.

Mr. Cambell had spent most of his 35 years in heavy construction with the Foundation Co., which he joined in 1926 after graduating from the University of Maine.

Between 1933 and 1938 he was on the Federal Emergency Administration of Public Works as an examining engineer, working out of Washington and New York. From 1938 to 1942 he was Borough Superintendent, Department of Housing and Building, New York City, in charge of the borough offices of Richmond, Queens and Manhattan.

He returned to the Foundation Co in 1942 and was elected president in 1956. Mr. Cambell had planned and directed the laying of foundations of several skyscrapers in downtown Manhattan, including the Irving Trust Company Building and the new Chase Manhattan Building.

He was past president of the Staten Island branch of the National Society of Professional Engineers, a member of the American Arbitration Society and president of the Moles, an association of heavy-construction engineers.

L. Roy Bowen, 75, former chief engineer of design and construction of municipal bridges and buildings for the City of St. Louis. He recently had his own engineering and architectural firm; L. Roy Bowen & Associates.

Jasper T. Kane, 83, civil engineer, for many years a division engineer of the New York City Board of Transportation.

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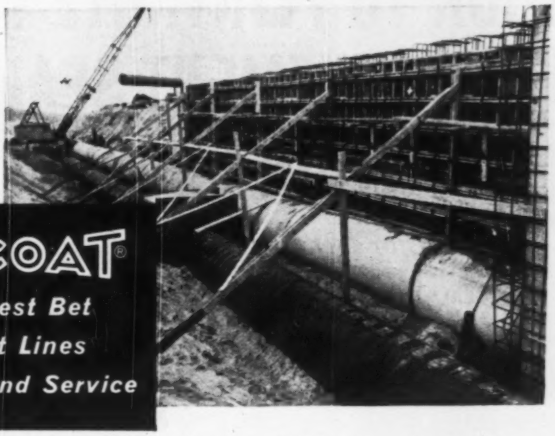

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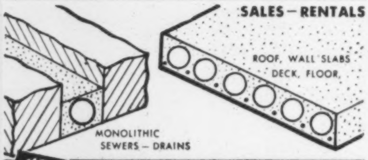

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. . . Obituaries

John U. Shroyer, 78, Pennsylvania Secretary of Highways from 1943 to 1946. He administered the department at the time a $500-million postwar roadbuilding program was drafted and put under construction.

Nathaniel A. Carle, 85, former Seattle city engineer and one of the few engineers in the nation to qualify in civil, mechanical, electrical, and mining engineering. He took part in construction of military bases at Attu and Adak in the Aleutians.

W. S. Nordburg, 72, a trustee of the Metropolitan Sanitary District of Greater Chicago since 1946. He served as vice president of the Sanitary District in 1958.

Col. William A. Johnson, 78, U. S. Army Corps of Engineers, retired. Among his assignments in a 38-year career were the control of the Susquehana River and the defenses of Hawaii and Alaska. He retired in 1944 as commander of the Army Map Service.

John E. Healy, Jr., 66, president of John E. Healy & Sons, Inc., a 77-year-old construction firm in Wilmington, Del.

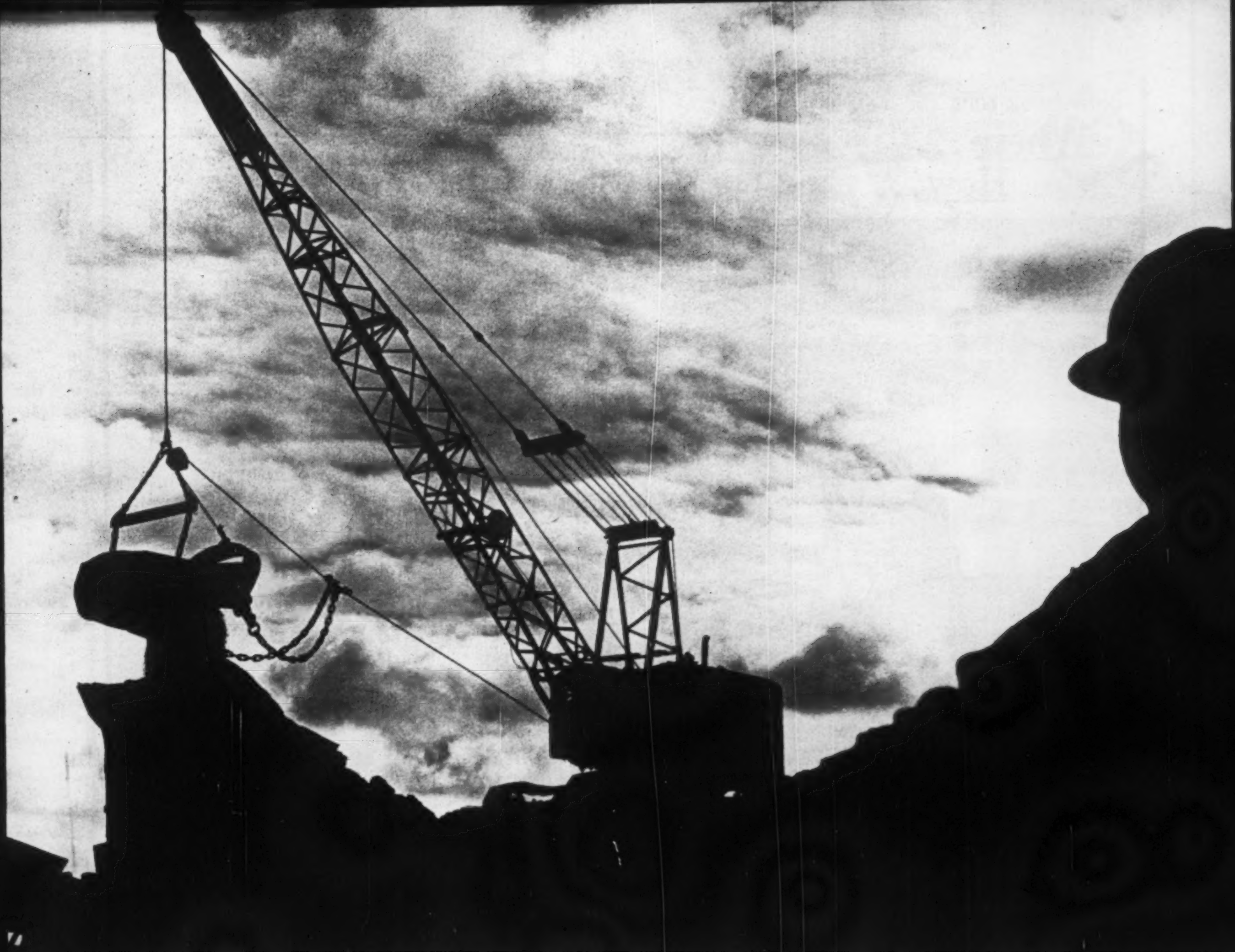
William Steele, 70, former vice-president of United Engineers and Constructors, Philadelphia. He is a former vice-president of William Steele and Sons, a Philadelphia construction company.

Paul F. Kavanagh, 65, a Cleveland engineer who, since World War II, has been associated with H. K. Ferguson Co., Arthur G. McGee and Rollin McDowell. At the time of his death he was assistant chief sanitary engineer in Cleveland.

Thomas I. Crowell, Jr., 66, retired vice president and director of the New York consulting engineering firm of Ford, Bacon and Davis, Inc.

Bernard W. Booker, 68, who retired last year after 37 years with the California Division of Highways. For the seven years preceeding his retirement he was assistant state highway engineer for the nine Bay Area counties, with headquarters in San Francisco.

Harry B. Harrison, 73, founder and president of the Harrison Engineering and Construction Corp., Buffalo, N. Y. He was head of the roadbuilding firm for more than 28 years before retiring in 1948.



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Connecticut Sewer Project

Reinforced concrete pipe, ASTM designation C 76-57-T, in sizes from 24 to 90 in. in diameter, will cost from $10 to $75 per lin ft for this 632 lin ft of sanitary and storm sewers on State Street in New Haven, Conn. Genorese & Cahn of New Haven were the consultants.

Mariani Construction Co., New Haven, was low on all pipe prices, giving it the advantage needed to take the $169,232 contract. Other prices on the 90 in. pipe ranged from $100 to $175 per lin ft. The Bureau of Purchases' award was 17% under the second bid and a whopping 53% below the high of the four bids.

The construction of these sanitary and storm sewers plus appurtenances is part of the South Central renewal area.

The sanitary sewers will have rubber gasket joints; the storm sewers, cement mortar joints.

Work includes furnishing of all materials and labor for the sewers and related work.

Union wage rates on New Haven sewer construction include: trench excavator operators, $3.80/hr plus $0.10 pension and $0.10 welfare; bulldozer operators, $3.10/hr plus $0.10 pension and $0.10 welfare; carpenters, $3.55 plus $0.08/hr welfare and $0.15 pension; and $2.75/hr plus $0.07 welfare for common labor.

The bidding included:

1C	Mariani Constr. Co., New Haven, Conn	$169,232
2	S.D. & W Constr. Co., Hartford, Conn	204,333
4	Mauro Constr. Co., No. Branford, Conn	361,664

Bids: 6-13-60 Items	Unit	Quantity	Unit Prices 1C	2
Trafficmen	hr	560	$2.75	$2.50
Remov all pvmt & conc bases in limits of sewer trench	sy	816	2.00	2.00
Exc, earth in sewer trench to depth of over 12′	cy	3,327	7.00	18.00
*RCP for sanitary sewers,				
cl III, 90″ f&l	lf	176	75.00	100.00
36″ fl&c	lf	320	20.00	80.00
IV, 24″ fl&c	lf	28	10.00	50.00
for storm sewers,				
cl III, 90″ fl&c	lf	56	75.00	100.00
IV, 54″ f&l	lf	24	30.00	60.00
V, 15″ for catch basin laterals f&l	lf	28	4.50	15.00
MH, sanitary, brick or conc circ or irreg, 4′ inside ϕ, compl to depths over 9′.c	ea	95	50.00a	40.00a
alter existing	ea	2	150.00	200.00
Catch basin, brick or conc block units, compl w Hartford type frame & grate, to depths of 7′ c	ea	1	250.00b	250.00b
alter existing	ea	1	150.00	150.00
Drop inlet, brick or conc block units compl w Hartford type frame & grate, to depths of 7′ c	ea	1	250.00	250.00
MH on 90″ sewer, compl w frame & cover .c	ea	2	1,500a	2,000a
sewer junct, compl w frame & cover c	ea	1	3,000a	3,500a
Gravel, bank run	cy	75	2.50	3.00
washed, or brkn stn, for dewatering &/or spec fndn	cy	53	3.00	10.00
Conc, cl a, side w & curb repl outsd limits of receiving chamber construction	cy	10	30.00	50.00
cl B, conc encasements, cradles & other items	cy	100	25.00	35.00
Bit binder crse & sht asph surf, perm pvmt repl	sy	816	3.00	8.00
Cold patch, temp pvmt repl.	sy	816	2.50	2.00
Stl shtg, shorg & bracg f&i	sf	21,440	1.50	1.00
left in place	sf	15,000	2.00	0.75
Remov exist msnry in sewer trench & outsd limits of receiv chamber constr, for actual volume removed	cy	25	10.00	50.00
Exc rock in sewer trench & outsd limits of receiving chamber construction	cy	10	10.00	15.00
Receiving chamber & adjacent transition sections. c	ls	job	36,000	30,000

* With rubber gasket jts for sanitary sewers & cmt mrtr jts for storm sewers.
a Less cost of frame & cover b Less cost of frame & grate
c Construct f&l Furnish & lay fl&c Furnish, lay & cap

$26,759 Takes Contract for Access Road to Dam Site

Guy Riney of Hannibal, Mo. bid low at $26,759 to build the access road for the proposed Vandalia reservoir. This is 5% under the second low, and 29% below the high of five bidders. The engineer is Russel & Axon of St. Louis. The job is for the city of Vandalia.

The road will provide access to the proposed dam site and city reservoir to be built early next year. The job includes earthwork, culverts, and crushed stone or gravel for surfacing.

Also included in the project is the construction of a timber bridge over the flume. This was a lump sum bid, with prices ranging from $3,450 to $5,500 for furnishing and installing.

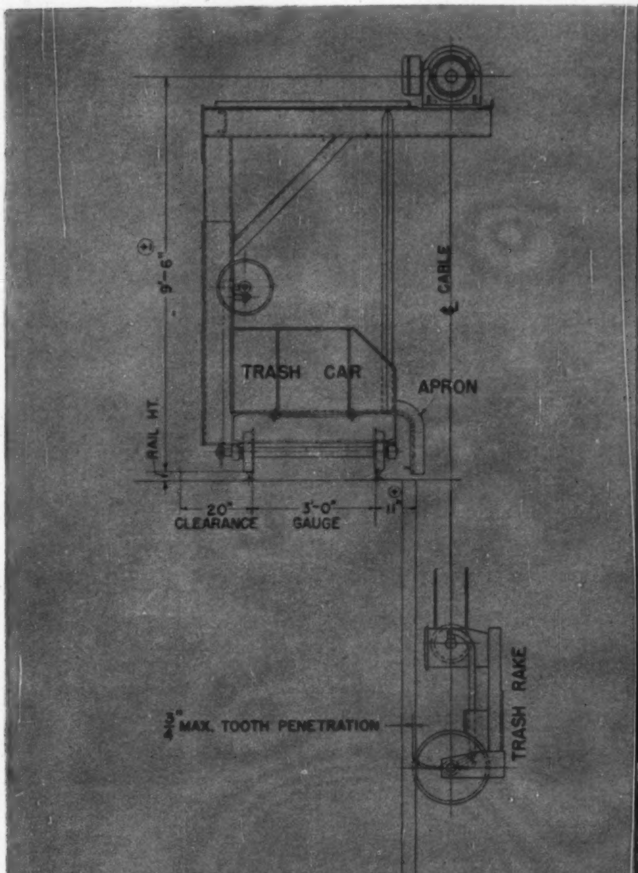
Prevailing wage rates on the project: skilled labor, $1.50/hr; semi-skilled, $1.35/hr; common $1.25/hr; and $2.95 for carry-all operators.

The bidding included:

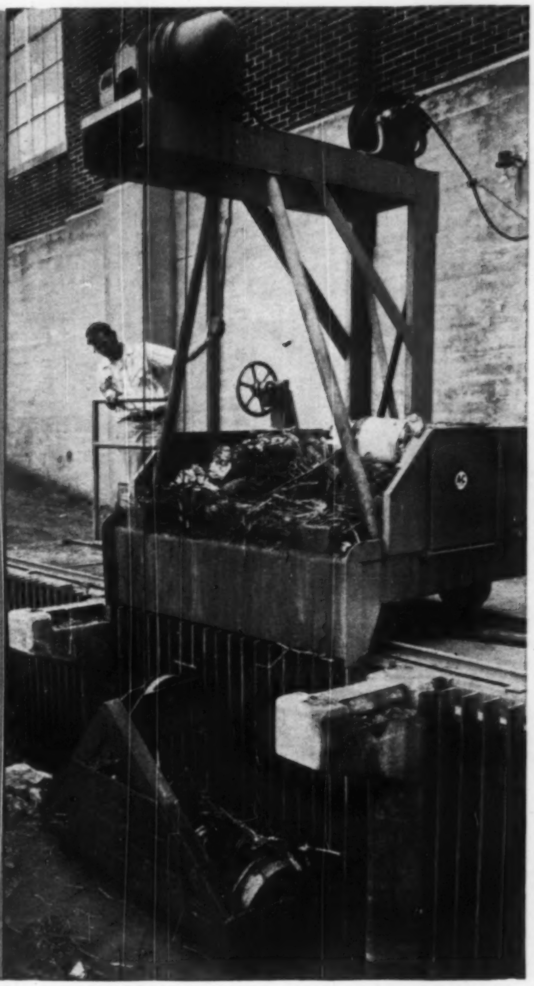
1B	Guy Riney, Hannibal, Mo	$26,759
2	Lewis W. Arnold, Mexico, Mo	28,286
5	Richardson & Bass Const. Co., Columbia, Mo	37,486
EE	Russel & Axon, St. Louis, Mo.	30,000

Bids: 8-15-60 Items	Unit	Quantity	Unit Prices 1B	2
Exc, rdwy	cy	600	$0.28	$0.38
borrow	cy	26,000	0.30	0.39
rock, for flume & rdwy	cy	2,700	1.90	1.50
Clearing	ac	4.8	175.00	125.00
Rdwy, station grading	sta	24.8	25.00	30.00
Timber bridge over flume,	ls	job	4,336	3,450
RCP, f & i, 60″	lf	100	28.00	27.50
36″	lf	82	12.60	11.50
30″	lf	100	9.25	7.50
CP, 18″	lf	42	5.00	4.00
15″	lf	30	3.75	3.50
12″	lf	36	3.00	3.00
Rip-rap, stone	cy	100	3.50	7.50
Rdwy surf mat	t	1,410	1.65	2.50

ALLIS-CHALMERS



Leonard Trash Rake
Typical 6-foot unit, combining rake, power hoist, support, trash car and apron. Design and size bring savings right from the start — eliminate any need for guides embedded in concrete or attached to rack bars.



Cleans up costly head losses

... rakes-in savings enough to pay for itself!

Here's intake-trash removal so far ahead of hand methods that *"once sold is sold forever!" Leonard* trash rake installations deliver savings both in reduced head loss and labor costs. And they bring a permanent solution to shortages of people to do the job — make trash removal a one-man operation.

Leonard trash rakes roll right down your existing rack bars whether vertical or inclined. Because no channel guides are needed, they freely ride over stubborn obstructions, dig them loose, scoop trash up to the waiting receptacle or car. Self-dumping units also are available—both log-grapple and regular models.

Leonard is an Allis-Chalmers trademark.

With Allis-Chalmers trash rakes even the initial investment is low. Width is held to the logical minimum required for adequate handling of trash . . . standard 6- and 8-foot sizes. Larger units special. Your nearby A-C representative has full details. Or write **Allis-Chalmers,** Hydraulic Division, York, Pa.

A-1307

Materials Prices

Monthly Market Quotations by ENR Field Reporters

IRON AND STEEL PRODUCTS—PER 100 LBS. BASE MILL PRICES

	STRUCT SHAPES—	PLATE CARBON STEEL	REINF BARS* billet	RIVETS ½-in. structural	SHEET PILING Base	STEEL RAILS Per Net Ton Standard	STEEL RAILS Per Net Ton Light	TRACK SUPPLIES Angle Bars	TRACK SUPPLIES Std Spikes	TRACK SUPPLIES Tie Plates	TRACK SUPPLIES Track Bolts
Birmingham Area	$5.50	$5.30	$5.675	$12.25	......	$110.50	$130.00	$6.975	$9.75	$6.60	......
Chicago Area	5.50	5.30	5.675	12.25	$6.50	110.50	130.00	6.975	9.75	6.60	......
Pittsburgh Area	5.50	5.30	5.675	12.25	6.50	110.50	130.00	6.975	9.75	6.60	$14.75
Buffalo Area	5.50	5.30	5.675	12.25	6.50	110.50	130.00	6.975	9.75	6.60	14.75
Cleveland	......	......	5.675	12.25	6.50	......	......	......	......	......	14.75
Youngstown Area	......	......	5.675	......	......	......	......	......	9.75	......	......
Geneva	5.50	5.30	......	......	......	......	......	......	......	......	......
Los Angeles	6.20	......	6.375	......	6.50	......	......	......	9.75	6.875	......
Pueblo	......	......	......	......	......	......	......	6.975	9.75	6.60	......

* Fairless Works, $5.575.

IRON AND STEEL PRODUCTS—F.O.B. WAREHOUSE, PER 100 LBS., BASE PRICE

	STRUCTURAL SHAPES Per 100 lb. base price	STRUCTURAL SHAPES Extras *W*	REINFORCING BARS Per 100 lb., base price 5 tons to carload lot New billet	REINFORCING BARS Rail steel	REINFORCING BARS Extras, New York:	EXPANDED METAL LATH*h* Per 100 sq. yd., carload lots Std. diamond mesh. 3.4 lb.	EXPANDED METAL LATH*h* Std. ribbed 3.4 lb.	WELDED FABRIC REINFORCING Per 100 sq ft., carload lots fob mill
Atlanta	7.29-8.29*EvV*	Quantity extras per cwt: item; 10,000# and over, base, 5,000—9,999#, +10¢, 2,000—4,999#, +35¢, 1,000—1,999#, +85¢, 400—999#, +$1.75, 100—399#, +$1.75, under 100#, +$1.75. Order: 20,000# and over, base, 10,000—19,999, +10¢, 5,000—9,999, +20¢, 2,000—4,999, +50¢, 1,000—1,999, +$1, 400—999, +$2, under 400, +$5.	8.75	$8.75	EXTRAS, per cwt—♦Quantity (applies to LCL shipments only): under 1,000#, +$1.80; 1000-1999#, +$1.50; 2000-4999#, +$1.20; 5000-9999#, +90¢; 10,000-19,999#, +60¢; 20,000-29,999#, +30¢; 30,000-39,999#, +10¢; 40,000# & up, none. ♦Size†: #2 +$2.50; #3 +$1.40; #4 +$1.00; #5 +70¢; #6, #7, #8, #9, #10, #11 +50¢. ♦Bending: heavy, +90¢; light +$2.20 (except in New York City and surrounding metropolitan area where bending must be done on the job). ♦Engineering (details and placing from designs by others): over 500 tons, +45¢; 200-499 tons, +50¢ but not over $4500; 75-199 tons, +65¢ but not over $2000; 20-74 tons, +75¢ but not over $975; 5-19 tons, +85¢ but not over $300; under 5 tons, +$1.00 but not over $85. Min. charge $25. Design only: +60¢.	$53.00*S*	$57.00*S*	4 × 18 in., No. 5 & 10 wires— Joliet, Ill., Donora, Pa., Monessen, Pa. ......$7.04 4 × 12 in., No. 8 & 12 wires— Joliet, Ill., Donora, Pa., Monessen, Pa. ......$2.62 6 × 8 in., No. 6 & 6 wires— Joliet, Ill., Donora, Pa., Monessen, Pa. $4.17
Baltimore	9.70		9.00*T*	....		44.50	49.00	
Birmingham	9.00*ty*		8.51-9.94*tyV*	8.51-9.94*ty*		61.00*pK*	67.00*pK*	
Boston	8.21-9.31 *KzsV*		8.75*t*	8.75*t*		49.50*K*	54.00*K*	
Chicago	6.96-8.23*ysV*		6.90-7.00*gu V*	6.90-7.00*guV*		52.00‡*U*	63.00‡*U*	
Cincinnati	7.52-8.79*skysV*		8.16*t*‡	....		44.50*Kg*	49.00*mnKg*	
Cleveland	7.35-8.62*s ysV*		6.75*ct*	....		46.50*KL*	51.00*KL*	
Dallas	7.71-9.49*MsV*		9.00	9.00		44.00*u*	48.50*w*	
Denver	8.12*cK*		9.25*c*	....		52.00*n*	57.00*n*	
Detroit	7.52-8.79*RMsVy*		7.37*Q*	11.85*Q*		67.00*O*	74.00*O*	
Kansas City	8.78*sT*		8.21*N*	....		51.00	55.00	
Los Angeles #	8.44-9.59*dktsV*		7.35*frt*	....		55.00*S*	64.00*S*	
Minneapolis	7.78-8.17*ysV*		9.26*T*	9.26*T*		44.50*K*	49.00*K*	
Montreal	7.90-8.60*iCF*/8.20-8.90*AiF*		7.00/7.50*FGi*	7.00/7.50*FGi*		65.70*h*	70.20*h*	
New Orleans	...		8.00*gkts*	....		50.00*K*	55.00*K*	
New York	8.02-8.84*Vzs*		8.60*ty*	8.60*y*		50.00*n*	58.00*no*	
Philadelphia	7.10-8.40*zsV*		8.23*uy*	8.23*y*		44.50‡*U*	55.20‡*U*	
Pittsburgh	6.96-8.23*ysV*		7.35*y*	....		58.50‡*rw*	64.50‡*rw*	
St. Louis	7.19-8.45*stxyV*		7.35‡*txQ*	7.35‡*txQ*		61.00*wxK*	62.00*wxK*	
San Francisco	8.43-10.34*zsV*		9.85*jS*	....		53.00*S*	58.00*S*	
Seattle	8.30-10.49*aDsV*		8.85*DM*	....		67.00‡*nD*	73.50‡*nD*	
Toronto	9.20*H*		7.40	7.40		49.50*qqI*	44.85*qJ*	

•‡ Delivered •* Aver. of Canadian & American •# add 4% sales tax •a 2000-4999# •b 10,000-19,999#, fob city •c 20 tons or over •d 10,000-29,999# •e Intermediate struct'l •f Inc delivery in free zone •g CL •h list price; dominion tax exempt; add provincial and municipal taxes •i add provincial and municipal sales taxes •j Intermediate and hard grade •k fob city •l delivered; contractor to do unloading •m copper alloy •n LCL •o asphalt coated •p 500 sq. yd. or more. •q 2.5 lb •r less 2% disc. for cash •s 10,000# item in 20,000# order •t less ½% disc. 10 days •u add 10¢ switch •v incl 15¢ del. •w truck lots. •x add 2% sales tax •y add 15¢ del. •z add 10¢ del. •A American made. •C Canadian made. •D ½% for cash. •E 30,000# or over. •F Federal tax exempt for bldgs. •G add 10¢ del. •H 8.85 without tariff charges. •I 3 lb $60.00. •J 4 lb $47.50. •K less 2% disc. 10 days •L F.o.b. Youngs-own plant •M 5,000-9,999# •N 2,000-19,999# •O 100 sy lots •Q 5 tons to CL •R: revised •S less 2% disc. 10th •T less ½% disc. 10th of mo •U less 2% disc 10 days •V varies according to type and size •W Chicago, Cincinnati, Cleveland, Dallas, Detroit, New York, Philadelphia, St. Louis, and Pittsburgh.

PLUMBING, HEATING, WATER, SEWER AND DRAIN PIPE

	C. I. PIPE PRICE INDEX*a*	ASBESTOS CEMENT PIPE T per lin. ft. 6" Press Cl. 150	ASBESTOS CEMENT PIPE T 12" Sew Cl. 1500	CLAY SEWER PIPE Per ft., delivered, car load ASTMC 13-55 8 in.	CLAY SEWER PIPE ASTMC 13-55 12 in.	CLAY SEWER PIPE ASTMC 200-55T 24 in.	CLAY SEWER PIPE ASTMC 200-55T 36 in.	CLAY DRAIN TILE† Per 1,000 ft., car load lots, f.o.b. ASTMC 4-55 6 in.	CLAY DRAIN TILE† 8 in.	CONCRETE SEWER PIPE*b* Per ft., delivered ASTMC 14-55 12 in.	CONCRETE SEWER PIPE*b* 24 in.
Atlanta	130.5	$1.52/1.69	$2.36/2.48	$0.55*r*	$1.04*r*	$4.50*r*	$12.60*r*	$209.00*er*	$334.00*r*	$0.95*m Kr*	$3.75*m Kr*
Baltimore	140.1	1.61/1.69	2.19/2.30	.665	1.20	3.05	12.71	187.80	289.20	1.01	2.75
Birmingham	125.8	1.52/1.69	2.26/2.37	.50*r*	.95*r*	4.14*rw*	13.50*rw*	295.00*rz*	430.00*rz*	1.75*rS*	2.75*rS*
Boston	143.1	1.63/1.71	2.19/2.30	.84*qrtL*	1.55*qrtL*	6.39*qrtM*		244.00*r*	348.60*r*	1.56*S*	3.60*S*
Chicago	139.8	1.61/1.69	2.19/2.30	.93*rm*	1.78*rm*	7.52*rm*	21.16*rm*	220.00*Rr*	330.00*Rr*	1.30	4.00
Cincinnati	135.5	1.63/1.71	2.19/2.30	.658*Rt*	1.269*Rt*	4.95*Rt*	12.91*R*	177.50*R*	274.60*R*	.85*rAB*	3.25*rAB*
Cleveland	141.6	1.63/1.71	2.19/2.30	.66*BCN*	1.27*tBC*	8.47*tBC*	23.45*tBC*	179.40*mBC*	276.60*mBC*	1.35	2.40*P*
Dallas	137.8	1.63/1.71	2.26/2.37	.575‡*B*	1.09‡*B*	4.75*b*‡*B*	10.53‡*bB*			1.27*BD*	2.95*BD*
Denver	144.9	1.71/1.80	2.36/2.48	.56*nr*	1.00*nr*	4.98*r*	.....	460.00*nr*	640.00*nr*	1.05*m*	3.50*m*
Detroit	141.9	1.63/1.71	2.19/2.30	.97*nk*	1.86*nk*	7.48*nk*	19.95*nk*	212.00*mk*	327.00*mk*	1.40*k*	5.23*k*
Kansas City	138.5	1.63/1.71	2.26/2.37	.62*r*	1.125*r*	6.324*br*	16.86*r*	315.00*r*	625.00*r*	1.70*r*	4.25*r*
Los Angeles #	148.6	1.67/1.79	2.19/2.30	[illegible]	1.78*blS*	7.19*blS*	16.90*blS*	410.00*lS*	590.00*lS*	1.24*sE*	3.66*fsE*
Minneapolis	144.8	1.67/1.75	2.26/2.37	1.00*oB*	1.80*oB*	7.75*oB*				2.19*DFH*	6.31*DFH*
Montreal	....	....	....	1.13*u*	2.00*u*	7.00*u*	13.50*u*	288.00	545.00	1.17*D*	3.11*ipD*
New Orleans	132.3	1.61/1.69	2.26/2.37	.566*r*	1.078*r*	5.65*r*		240.50*rr*	568.00	1.41*ilR*	3.76*il*
New York	138.5	1.63/1.71	2.19/2.30	.94	1.76*R*	12.89	35.61	240.81	369.84	1.50‡*B*	3.60‡*B*
Philadelphia	137.8	1.61/1.69	2.19/2.30	.72‡	1.40‡	9.02‡*r*	24.68‡*r*	220.00‡	330.00‡	1.50‡*h*	4.00‡*h*
Pittsburgh	142.7	1.63/1.71	2.19/2.30	.66*K*	1.27*K*	4.95*K*	12.92*K*	197.00	302.00	1.66*Db*	3.93*DB*
St. Louis *O*	136.8	1.61/1.69	2.26/2.37	.62*r*	1.23*r*	5.10*r*	12.95*rS*	200.00*r*	350.00*r*	1.75*r*	4.05
San Francisco	148.6	1.67/1.79	2.19/2.30	.86‡*d*	1.86‡*d*	7.53‡*d*	18.00‡*d*	360.00‡*l*	620.00‡*l*	1.05‡*Q*	3.30‡*Q*
Seattle	149.0	1.71/1.80	2.19/2.30	.88*bk*	1.86*kb*	7.61*k*	.....	260.00*ck*		1.90*ky*	4.50*ky*
Toronto				.80*F*	1.50*F*	6.00*F*		185.00*F*	305.00*F*	1.27*F*	5.19*F*

*WROUGHT STEEL PIPE (Full standard weight) Discount from list; see footnote

Mill	2½ & 3 in.,* Black %	2½ & 3 in.,* Galv. %	3½ to 6 in.,* Black %	3½ to 6 in.,* Galv. %
Lorain, Ohio	13.75	+3.50	+1.75*f*	+19.50*j*
Aliquippa, Pa	13.75	+3.50	3.25*a*	+14.50*a*
Sparrows Pt., Md	17.25	+List	....	....
Benwood, W. Va	13.75	+3.50	....	....
Youngstown, O	13.75	+3.50	3.25	+14.50*a*
Indiana Harbor, Ind	12.75	+4.50	2.25*ab*	+15.50*a*
Sharon, Pa	13.75	+2.50	3.25*ab*	+13.50*ab*
Wheatland, Pa	13.75	+3.50	3.25*a*	+14.50*a*
Etna, Pa	13.75	+3.50	.50*de*	....
Fontana, Calif	0.75	+16.50*b*	+9.75*ab*	+27.50*ab*

* Threaded and coupled. *a* 3½ to 4 in. *b*: to 1
5 and 6 in. *c* 6 in. *d* Seamless 5 in.

•† Extra quality. •‡ delivered. •# add 4% sales tax •a PRICE INDEXES or CENTRIFUGAL CAST IRON PIPE (Include carload freight allowed to city). These also serve as the HISTORICAL RECORD of THE $ PER NET TON PRICE of CLASS B, B&S, PIT CAST IRON PIPE. F.O.B. Foundry Price Indexes Birmingham, Ala., 125.8; Burlington, N. J., 134.6. For explanation of index see ENR Sept. 29, 1955 page 139. •b Extra strength. •c 4-in., $130. •d SS361-A. •f 21 in. •g culvert pipe; reinf., ASTM C 75-56. •h reinf., ASTM C 75-54. •i reinf., ASTM C 76-55. •j centrispun. •k less 2% disc. for cash. •l fob plant. •m truck del. •n LCL del., fob truck. •p less 5% disc. 10th. •q freight allowed to destination in city. •u 35,000# minimum. •r less 2% disc. 10 days. •s 1 ft lengths. •u CSA A 60. •v standard strength. •w SS; add 20% for d.s. •x fob city. •y Reinforced. •z Upper value in range based on both truck lots and less than truck lots, fob city; lower value truck lots delivered. •A single strength. •B truckload. •C less 2% disc. 15th. •D ASTM 76-57. •E less 1% disc. 10 days. •F less 2% disc. 30 days. •G LCL. •H CL. •I fob origin, freight allowed. •J reinf. B14-15. •K Less 2% disc. 15 days. •L ASTM 13-57. •M ASTM 200-57. •N 2 ft lengths. Trucklots. •O add 2% Sales Tax. •P 18 in. •Q less 1% disc. 10th. •R revised to show carlot instead of trucklot •S ASTMC 72, 12" 1.55, 24" 4.00. •T Second price transite pipe.

WROUGHT STEEL PIPE, butt or continuous weld: Deduct (+) or add (−) these "discounts" from or to the following carlot list prices to get mill prices. Price per ft. (based on approx. $200 per net ton): 2½ in., 58½¢; 3 in., 78½¢; 3½ in., 92¢; 4 in., $1.09; 5 in., $1.48; 6 in., $1.92. Add freight for destination price.

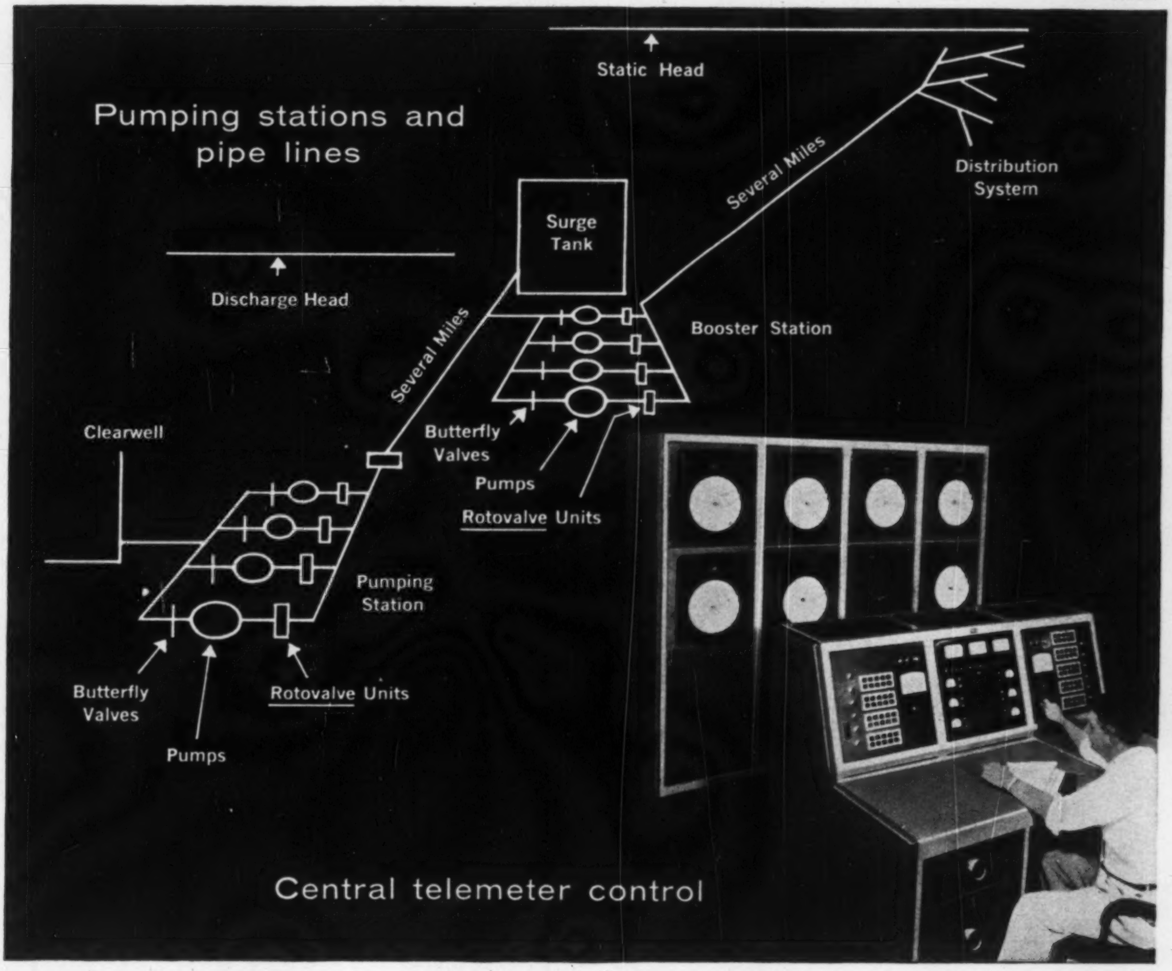
WROUGHT IRON PIPE, lap weld: List prices per ft. same as for wrought steel pipe, but add these "discounts" to get Pittsburgh mill price. 2½ to 3 in., black 106%, galv. 139%; 4 to 6 in., black 103%; galv. 133%. Add freight for destination price.

See following ENR issues for OTHER PRICES:

- Wood Products, Glass, Explosives, Chemicals: Last, Sep. 22; Next, Oct. 20.
- Clay Products, Lime, Plaster, Paint, Roofing: Last, Sep. 29; Next, Oct. 27.
- Wage Rates, Building Board, Lath, Insulation: Last, Sep. 29; Next, Nov. 11.
- Cement, Aggregate, Ready Mixed Concrete, Asphalt: Last, Oct. 6; Next, Nov. 10.

ALLIS-CHALMERS

A-1229


Pumping stations and pipe lines
Static Head
Distribution System
Several Miles
Surge Tank
Discharge Head
Booster Station
Several Miles
Butterfly Valves
Pumps
Rotovalve Units
Clearwell
Pumping Station
Butterfly Valves
Rotovalve Units
Pumps
Central telemeter control

One man controls 60 mgd with

telemetered valving

Pumping stations operate completely unattended, controlled from a central remote console in this major water procurement and distribution system. Rated for 60-mgd peak load, it distributes over a 100-square-mile area from widely separated stations and storage tanks.

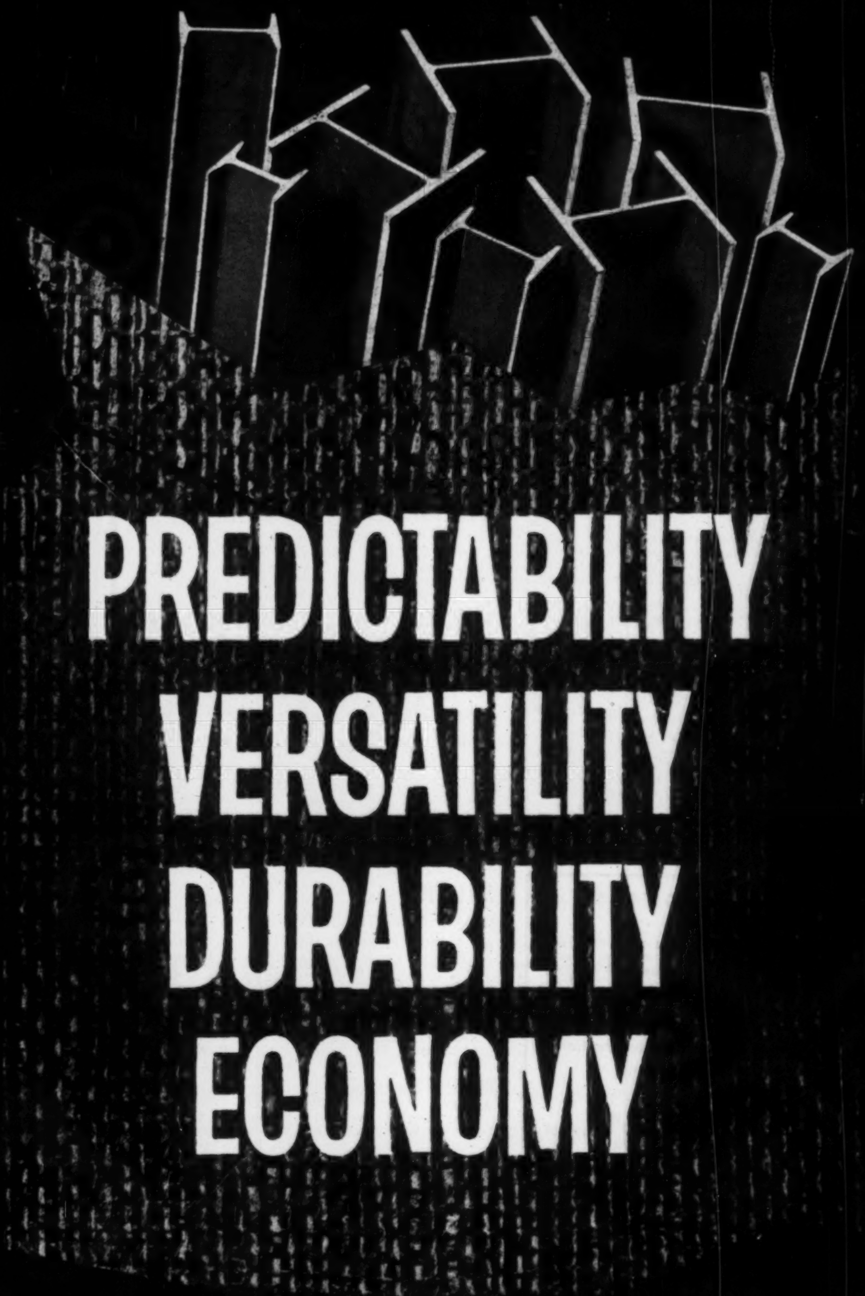
This is another dramatic example of complete valving service offered industry by Allis-Chalmers. Whatever you're dealing with, liquids or gases, including highest temperatures and pressures — Allis-Chalmers is your convenient source of today's most comprehensive rotary valve line. Types and sizes cover virtually every need . . . including *Rotovalve* units, butterfly and wafer valves and ball valves. We can also assist you in every phase of planning, engineering and installation. *Contact your Allis-Chalmers representative, or write* **Allis-Chalmers,** *Hydraulic Division, York, Pa.*

Rotovalve is an Allis-Chalmers trademark.

Key to a superior valving system, Rotovalve units offer the least pressure loss . . . ideal flow characteristic . . . controlled timing . . . positive seating . . . easy operation always.

You never buy a pig in a poke
when you design highway bridges with steel.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA. *Export Sales: Bethlehem Steel Export Corporation*



PREDICTABILITY
VERSATILITY
DURABILITY
ECONOMY

Steel

for Strength
. . . Economy
. . . Versatility

No guesswork! Structural steel is stable, uniform. You can calculate its ability to support loads precisely, and in advance.

Your fabricator can "tailor" structural steel to almost any shape, without sacrificing strength. You can adapt it to almost any architectural form.

Steel bridges last and last. Witness the Eads Bridge across the Mississippi. Completed in 1874, it's still on the job. And it has no intention of retiring.

Prefabricated in the shop, structural steel arrives at the site ready to go into place—in a hurry. No expensive, time-wasting field operations.

You always know exactly what you're getting.

BETHLEHEM STEEL

BETHLEHEM STEEL

Construction Reports

Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, MARIE MORAVSIK, ELEANOR QUERET, Reports, J. H. WEBBER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—BA

▲ **RHODE ISLAND**—BA 10/19—State R. I. & Prov. Plantations, Div. Purchase, State House, Providence, **Narragansett and S. Kingstown**—constr. 2½ mi. controlled access relocation of Rte. 1. $2,538,000. CD 12/2.

BUILDINGS—BA

▲ **Mass., Boston**—OFFICE ADDN.—BA 10/18—New England Mutual Life Insurance Co., 501 Boylston St., 10 story office addn. $7,500,000. Hoyle, Doran & Berry, 248 Boylston St., archts. CD 8/18.

▲ **Conn., Hartford**—SCHOOL—BA 10/27—Town, Purch. Agt., 550 Main St., Contr. No. E 20-414, 2 story Fred D. Wish Elementary School, 350 Barbour St., $1,500,000. Plans deposit $100. Wilkins & Stecker, 945 Asylum Ave., Hartford, Conn., archts. Loomis & Loomis, 252 Broad St., Windsor, Conn., consult. engrs. VanZelm, Heywood & Shadford, 1007 Farmington Ave., West Hartford, Conn., mech. engrs. CD 8/31.

HEAVY CONSTRUCTION—LB & CA

▲ **M. S. Kelliher Co.**, 10 Tremont St., Boston, Mass., LB **$1,757,662**, MPA 1.022 Terminal addn., passenger loading piers, General Edward L. Logan Airport EAST BOSTON, MASS. Commonwealth of Mass., Port Auth., 141 Milk St., Boston, Mass. Bids Sept. 29. CD 9/1.

Mitre Corp.—L. G. Hanscom Field, c/o U. S. Eng., 424 Trapelo Rd., Waltham, Mass., will not construct COMPUTER BLDG., OFFICE and BOILER ROOM, BEDFORD, MASS. CA **$4,000,000.** Project cancelled and abandoned. CD 9/21, under CA.

▲ **F. H. McGraw & Co. of Connecticut, Inc.**, 51 E. 42 St., New York, N. Y., CA Est. **$4,000,000**, 8 story, HOTEL AMERICA, Front St. and Constitution Plaza, HARTFORD, CONN., Hotel Corp. of America, 400 Commonwealth Ave., Boston, Mass. Curtis & Davis, 331 Madison Ave., New York, N. Y. and Charles DuBose, 95 Woodland St., Hartford, archts. CD 11/20/58.

MIDDLE ATLANTIC

BUILDINGS—BA

▲ **N. Y., Brooklyn**—SCHOOL—**BA** 10/21—Deputy Supt. of Schools, Bureau of Constr., 4th Floor, 42-15 Crescent St., Long Island City 1, general contract, plumbing and drainage, ventilating, electrical work and lighting fixtures, P.S. 304, Sumner Ave. between Pulaski and Hart Sts., CD 1/25; and P.S. 305, Monroe St. between Marcy and Tompkins Aves., CD 7/11, Brooklyn Boro. Individual bids on each school is required. A combination of the two schools is invited. Plans deposit $25 general, $10 mechanical trades.

▲ **N. Y., New Dorp**—SCHOOL—BA 10/24—Deputy Supt. of Schools, Bureau of Constr., 4th Floor, 42-15 Crescent St., Long Island City 1, general contract, plumbing and drainage, heating and ventilating, electrical work and lighting fixtures New Dorp high school addn., modernization, Clawson St. between Lindbergh and Allison Aves., Richomnd Boro. Plans deposit $35 general, $15 mechanical trades. CD 7/28/59.

▲ **N. J., Totowa**—PLANT—BA 10/27—Yardley of London, 600 Palisade Ave., Union City, N. J. (selected list bidders), 236,000 sq. ft. finishing and distribution plant, Union Blvd. and Riverview Dr. $3,000,000. Edward D. Stone, 7 E. 67 St., New York, N. Y., archt. Engineers, Inc., 487 Oregon St., Newark, N. J., engr. CD 8/17.

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany,

N. Y.—**Century Equipment Rental Corp., Psaty Corp.** and **Columbus Constr. Co., Inc.**, 29-28 41 Ave., Long Island City, N. Y., CA **$5,786,299**, 9 in. c. conc. pavt. 7.31 mi., b. conc. 0.36 mi., misc. work 0.32 mi., 1 PRGS plate girder 138.9 ft., 2 HGS comp. alum. 4 span 220.1 ft., 220.1 ft., etc., Conduit Blvd., Pt. 5, SH 5701A, Sunrise Hy., Exten. Pts. 1, 2, 2A, SH 8474, E 8438, 8470 Amityville Village, Broadway SH 1633, Proj. U-UG 947(19) Rte. 27 and 110, FARC 60-138, Nassau and Suffolk Counties;

N. Y.—**DeLillo Constr. Co. Inc.**, 94 Marine St., Farmingdale, L. I., N. Y., CA **$3,492,190**, 9 in. c. conc. pavt. 4.34 mi., b. conc. pavt. 4.2 mi., misc. work 0.1 mi., 4 H.G.S. comp beam 4 spn. 274.1 ft., 4 sp. 236.2 ft., 4 sp. 261.3 ft., 4 sp. 204.7 ft. Long Island Expressway, Contr. 9 (Pinelawn Rd. to Deer Park Ave.) Proj. U-862(27) FALIE 60-2, Suffolk Co.;

N. Y.—**Philsan Co.**, 152 W 42 St., New York 36, N. Y., CA **$1,234,541**, b. conc. Type 2A 0.37 mi., misc. work 0.06 mi., R.R.G.S. comp. WF beam bridge 343 ft. total, City of Niagara Falls, Hyde Park Blvd., (Jerauld Ave. to Lockport Rd.) Hyde Park Blvd., (Lockport Rd. to Birch Ave.) Proj. U-UG-1128(4) FAC 60-3, FASH 60-1, Niagara Co. Grand total $10,714,489. Bids Aug. 25, awarded Sept. 28. CD 9/23, under LB.

▲ **NEW YORK** — State Bridge Auth., Bridge Plaza, Poughkeepsie,

Dravo Corp., 19 Rector St., New York 6, N. Y. and **Frederick Snare Corp.**, 233 Broadway, New York 7, N. Y., CA **$3,981,060** substructure Contr. 1, Newburgh-Beacon Bridge, Orange and Dutchess Counties. Bids Aug. 31. CD 9/6, under LB.

▲ **Ruckman & Hansen, Inc.**, and **Roy Ryan Sons Co., Inc.**, 5620 Industrial Rd., Fort Wayne, Ind., CA **$1,871,355**, Southwest Freeway Inner-Loop, 7th St. to 11th St., Wash., D. C. D. C. Govt., Dpt. Hys., 499 Pennsylvania Ave. N. W., Wash., D. C CD 9/19, under LB

BUILDINGS—LB & CA

▲ **Caristo Constr. Corp.**, 26 Court St., Brooklyn 1, N. Y., CA **$1,593,000**, general contract PUBLIC SCHOOL 257, Varet and Humboldt Sts., Brooklyn Boro, BROOKLYN, N. Y. Supt. Design, Constr. and Physical Plant, Bureau Constr., 4 Floor, 42-15 Crescent St., Long Island City 1, N. Y. Bids Sept. 27. CD 9/30, under LB.

▲ **Caristo Constr. Corp.**, 26 Court St., Brooklyn 1, N. Y., CA **$3,774,000** general contract combination PUBLIC SCHOOL 282, 6 Ave. between Berkeley Pl. and Lincoln, and JUNIOR HIGH SCHOOL 294, DeKalb Ave. between Carlton Ave. and Adelphi St., BROOKLYN, N. Y. Supt. Design, Constr. and Physical Plant, Bureau Constr., 4 Floor, 42-15 Crescent St., Long Island City 1, N. Y. Bids Sept. 21, awarded Sept. 29. CD 9/22, under LB.

D. J. Rice, Inc., 41-50 38 St., Long Island City 1, N. Y., CA **$628,125**, heating and ventilating combination P. S. 282 and Junior High School 294 (Brooklyn, N. Y.).

▲ **Colmar Constr. Co., Inc., 364 Gold St., Brooklyn**, N. Y., LB **$1,947,000**, general contract JUNIOR-SENIOR HIGH SCHOOL, COMMACK, N. Y. Bd. Educ. Union Free School Dist., No. 10, Jericho Turnpike, Commack, N. Y. Bids Sept. 16, CD 9/7;

Hassett Thermo Corp., 909 New York Ave., Huntington, N. Y., LB **$478,478**, heating and ventilating for Junior-Senior High School (Commack, N. Y.).

▲ **Kips Bay Towers, Inc.**, 501 Fifth Ave., New York 17, N. Y., Owner Builds, **$2,400,000**, 20 story APARTMENT, 235-245 East 29 St., NEW YORK, N. Y. S. J. Kessler & Son, 551 5 Ave., New York 16, N. Y., archts. CD 8/25.

▲ **Wilaka Constr. Co., Inc.**, 11 E. 44 St., New York 17, N. Y., CA **$1,549,000** general contract PUBLIC SCHOOL 161, W. 133 St. between Amsterdam and Convent Aves., Manhattan Boro, NEW YORK, N. Y. Supt. Design, Constr. & Physical Plant, Bureau Constr., Fourth Fl., 42-15 Crescent St., Long Island City 1, N. Y. Bids Sept. 9, awarded Sept. 19. CD 9/12, under LB.

▲ **Magna Development Corp.**, c/o George G. Miller, archt., 505 Fifth Ave., New York 17, N. Y., Owner Builds, **$1,200,000**, APARTMENT, 18-22 Lake St., WHITE PLAINS, N. Y.

▲ **ZMB Corp.**, c/o Louis Zaris, Schwehm Bldg., Atlantic City, N. J., Owner Builds, **$2,700,000**, 14 story, 140 unit COOPERATIVE APARTMENT, incl. swimming pool, garage and 1,000 sq. ft. commercial space, Harrisburg and Ventor Aves., ATLANTIC CITY, N. J.

▲ **Underhill Constr. Co.**, 311 Meacham Ave., Elmont, L. I., N. Y., Owner Builds, Est. **$1,200,000**, 10 story, 74 unit APARTMENT, South Harrison St., EAST ORANGE, N. J. Gerber & Pancani, 11 Commerce St., Newark, N. J., archts.

▲ **Harris Structural Steel Co.**, 419 Park Ave. S., New York 16, N. Y., CA STRUCTURAL STEEL, 4 story Administration Office and Cafeteria, Indian Rd. and Berdan Ave., near Pine Lake, WAYNE, N. J. American Cyanamid Co., 30 Rockefeller Plaza, New York, N. Y. Total est. **$15,000,000.** General contract to be bid in January 1961, CD 7/29;

Fred J. Brotherton, Inc., 185 Atlantic Ave., Hackensack, N. J., CA FOUNDATION 4 story Administration Office and Cafeteria near Pine Lake (Wayne, N. J.).

▲ **Volpe Constr. Co.**, 261 Constitution Ave. N. W., Wash., D. C., LB **$1,723,000**, (10 bidders), St. Ann's Infant HOME, Eastern Ave., near 16th St., N. E., Wash., D. C. Archidiocese of Washington, 1721 Rhode Island Ave. N. W., Wash., D. C. CD 9/2.

▲ **George K. Heebner, Inc., 1231** Vine St., Phila. 7, Pa., CA Est. **$7,500,000**, 5 story, 160,000 sq. ft. GYPSUM PLANT, and one story, 29,000 sq. ft. **OFFICE BLDG.** ROCK STORAGE, **and** LABORATORY, **WILMINGTON, DEL., Bestwall** Gypsum Co., Ardmore, **Pa. Johnson & Johnson**, Inc., 22 W. Madison St., Chicago 2, Ill., archt. and eng. CD 2/31/58.

SOUTH

HEAVY CONSTRUCTION—BA

▲† **Alabama-Georgia**—BA 11/11—U. S. Eng., 2301 Grant St., Mobile, Ala., powerhouse and non-overflow dike, ENG-01-076-61-12, Ft. Gaines, $6,000,000. CD 9/13.

BUILDINGS—BA

▲ **N. C., Raleigh**—SCHOOL—BA 11/1—Bd. Educ., 228 New Bern Ave., 170,000 sq. ft. Longview High School, $1,800,000. Plans deposit $100. Leif Valand, 2016 Cameron St., archt. CD 3/18.

BUILDINGS—SLC

▲ **Tenn., Kingsport**—DEPARTMENT STORE—Miller's Dpt. Store, S. Gay St., Knoxville, soon lets contract, 100,000 sq. ft. department store, $1,500,000. Painter, Weeks & McCarty, 618 Church St., Knoxville, archts. CD 8/29, under LB.

HEAVY CONSTRUCTION—LB & CA

▲† **L. G. DeFelice & Son, Inc., Nettlebon Ave., North Haven, Conn., CA $4,335,119, access highway, middle section, Dulles International Airport, CHANTILLY, VA. Federal Aviation Agency, 16th and Constitution Ave. N.W., Wash., D. C. Bids Sept. 6. CD 8/15.**

▲ **Sullivan, Long & Hagerty**, 801 5th Ave. N., Birmingham, Ala., LB **$1,347,977**, 2 water pumping stations and chemical building, BIRMINGHAM, ALA. Industrial Water Bd., City Hall, Birmingham, Ala. Bids Sept. 27. CD 9/19.

BUILDINGS—LB & CA

▲ **John W. Daniel Constr. Co. Inc.**, 3232 Riverside Dr., Danville, Va. LB **$1,243,000**, (7 bidders), HIGH SCHOOL, HAMPTON, VA. School Bd., City, 19 Carey St, Hampton. Va. Bids Sept. 29, CD 9/2.

▲ **Rust Engineering Co.**, 930 Fort Diquesne Blvd., Pittsburgh 22, Pa., CA Est. **$1,750,000**, design and construct pulp mill addn., incl. two digesters, pulp washer, lime kiln and equipment, ROANOKE RAPIDS, N. C. Halifax Paper Co., Div. Albermarle Paper Mfg. Co., 815 Perry St., Richmond, Va.

▲ **Blount Bros. Constr. Co.**, 79 Commerce St., Montgomery, Ala., CA **$3,076,500**, NUCLEAR REACTOR BUILDING at Georgia School of Technology, ATLANTA, GA. Bd. Regents, University of Georgia System, 244 Washington St. S.W., Atlanta, Ga. CD 4/14/59.

▲ **Frank J. Rooney, Inc.**, 5880 N.E. 4th Ave., Miami, Fla., CA **$6,536,000**, 450,000 sq. ft., 353 units, Sunset Towers APARTMENTS, swimming pool, PARKING GARAGE, BAL HARBOUR, FLA. Bobin Enterprises, Inc., 940 Lincoln Rd., Miami Beach, Fla.

(Continued on page 110)

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $53,000; other public works $88,000; Industrial buildings $110,000; other buildings $400,000. Also Foreign projects of $1,000,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED
New England
Middle Atlantic
South
Middle West
West of Mississippi
Far West

PROPOSED WORK
Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Public Buildings
Mass Housing
Commercial Buildings
Industrial Buildings
Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.

BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

SOON LETS CONTRACT: SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily Issue in which last previous report was published.

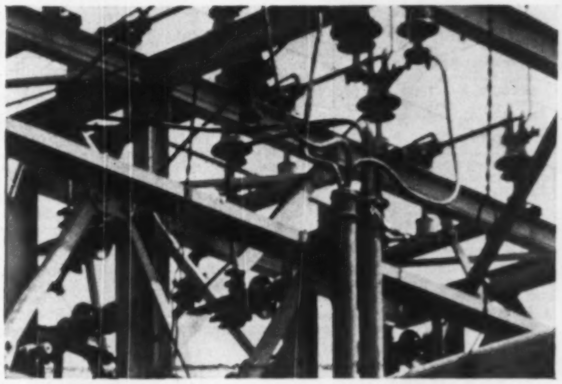
OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

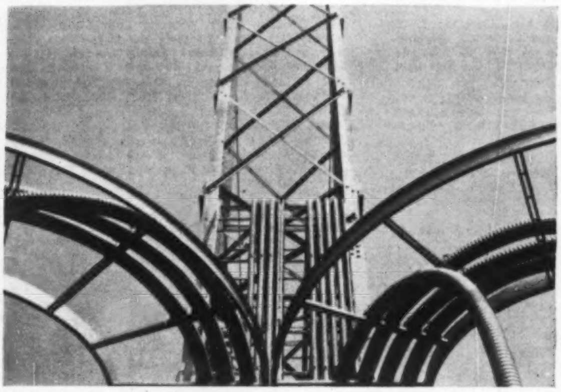
†	**Federal Government**
▲	**Project of $1,000,000 or over.**
ENR	**Engineering News-Record**
CD	**Construction Daily**

For additional reports see Construction Daily.

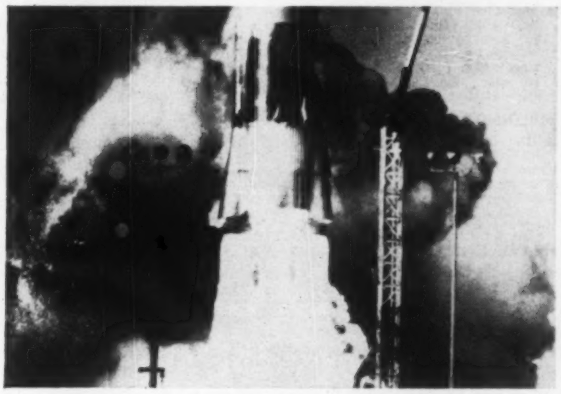
"Old Dog — New Tricks"...



"Nervous System for a Giant"...



"Bridge on the River KVA"...



"We've Coined a Word for It"...

REMEMBER THESE ADS?

These pictures, gleaned from recent advertisements in Engineering News-Record, show just a few of Lord Electric Company's activities. Whether it's installing the electric trolley for a jet hangar door or helping to loft an ICBM, Lord brings every project cost-saving ingenuity to match its 65 years of experience.

We've just published a handsome, new, 48-page book telling something of that experience, dating back to 1895, when electrical energy was a new utility. It depicts a variety of the important recent electrical installations that have taken us into 39 states, Puerto Rico, and the British West Indies. We will be pleased to send you a copy. Just jot a note on your letter head and we will put your book in the mail for you at once.

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Electrical Contractors to the Nation Since 1895

BOSTON 661 Beacon Street, Boston 15, Mass.
NEW YORK 10 Rockefeller Plaza, New York
RICHLAND, WASH. 1305 Mansfield Street
PITTSBURGH 2 Gateway Center
PORTLAND, ORE. 1034 S. E. Water Avenue

(Continued from page 108)

T. Trip Russell & Associates, Dupont Plaza Center, Miami, Fla., archts.

▲ **Canaveral Park, Inc.**, c/o Norman Zeller, 500 7 Ave., New York, N. Y., Owner Builds (1st yr. constr., $8,000,000). Total **$25,000,000.** 1,500 HOMES, 437 acres south of Patrick Air Force Base along Banana River, CAPE CANAVERAL, FLA.

▲ **J. Hilbert Sapp**, P.O. Box 2053, Orlando, Fla., LB **$2,114,300,** Deland SENIOR HIGH SCHOOL, Deland JUNIOR HIGH SCHOOL and DeWitt Taylor JUNIOR-SENIOR HIGH SCHOOL, DELAND, FLA. Volusia Co. Bd. Public Instruction, 230 N. Stone Ave., Deland, Fla. Bids Sept. 27. CD 9/12.

▲ **W. F. Thompson Constr. Co.**, 3228 Ponce De Leon Blvd., Coral Gables, Fla., CA Est. **$1,500,000,** 12 story OFFICE BUILDING, SOUTH MIAMI, FLA. Maston G. O'Neal, Jr., 5940 S.W. 73rd St., South Miami, Fla. T. Trip Russell & Assocs., Dupont Plaza Center, Miami, Fla., archts.

▲ **Blake Piercy**, Brooks Circle, Kingsport, Tenn., Owner Builds, **$1,500,000,** 100 RESIDENCES, KINGSPORT, TENN.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

▲ **O., Cleveland**—BA 10/26—Bd. Comrs. Cuyahoga Co., 451 County Admin. Bldg., 1219 Ontario St., Zone 13 Cedar Richmond Trunk Sanitary Sewer, Sections, A, B, C, D and E, $1,400,000. Plans deposit $25. Harry Gallimore, 3482 Lee Rd., Zone 20, engr. John Puzenski, c/o owner, co. sanitary engr. CD 6/4/56.

BUILDINGS—BA

▲ **O., Columbus** — PSYCHIATRIC INSTITUTE AND HOSPITAL—BA 11/1—Dpt. P. Wks., State Depts. Bldg., Columbus, Zone 15, Columbus Psychiatric Institute and Hospital wing for Dpt. Mental Hygiene and Correction, $1,225,000. Plans deposit $50. Brown, Brubaker & Brandt, 1384 Grandview Ave., archts. CD 8/7/59.

HEAVY CONSTRUCTION—LB & CA

▲ **National Engineering & Contg. Co.**, 1968 W. 3rd St., Cleveland 13, O., LB **$1,484,798,** est. $2,000,000, (6 bidders), extending W. 3rd St. Pier, CLEVELAND, O. City, Dpt. Port Control, City Hall, Cleveland 14, O. Bids Sept. 22. CD 9/7.

▲ **ILLINOIS**—Dpt. P. Wks. & Bldgs., Div. Hys., Centennial Bldgs., Springfield,

Ill.—**R. B. Potashnick Co.**, Cape Girardeau, Mo., CA **$2,635,897** grading, bridges, FA 155 near Elsah, Jersey Co. Bids Sept. 13, **awarded Sept. 26;**

Ill.—**Contracting & Material Co.**, 1235 Dodge Ave., Evanston, Ill., CA **$696,215,** concrete paving from Palatine, easterly, Cook Co.;

Ill.—**Loitz Bros., Dyer-Loitz, Inc. & Dyer Constr. Co.**, Grant Park, Ill., CA **$1,325,150,** pavement 5.39 mi., by-pass for US Rte. 14, Woodstock, McHenry Co.;

Ill.—**J. P. Wetherby Constr. Co.**, 1016 W. Superior St., Ottawa, Ill., CA **$551,464,** pavement 3.21 mi., base course wid'n., resurf. 0.63 mi. Ill. Rte. 29 from Main St. Putnam southeasterly to 1½ mi. north of Henry, Putnam and Marshall Counties. Bids Sept. 13. Grand total. $5,208,726. CD 9/16, under LB.

▲† **Dunbar & Sullivan Dredging Co.**, 2312 Buhl Bldg., Detroit 26, Mich., LB **$1,170,622** est. $814,990. dredging Lower Livingstone Channel and East Outer Channel, Lower Detroit River below International Boundary CIVENG-20-064-61-6, MICHIGAN. U. S. Eng., 1101 Washington Blvd., Detroit 26, Mich. Bids Sept. 23. (**Correction**—Contractors address and estimated cost). CD 9/28 under LB.

▲† **Great Lakes Dredge & Dock Co.**, 228 N. LaSalle St., Chicago, Ill., LB **$1,094,565,** dredging west approach to Locks, St. Marys Falls Canal, St. Marys River, Sault Ste. Marie, CIVENG-20-064-61-10, MICHIGAN. U. S. Eng., 1101 Washington Blvd., Detroit 31, Mich. Bids Sept. 29. CD 9/12.

BUILDINGS—LB & CA

▲ **Paugh & Brown**, 6007 Euclid Ave., Cleveland 3, O., LB **$1,517,855,** (4 bidders) general contract Churchill-Orville JUNIOR HIGH SCHOOL, CLEVELAND, O. Bd. Educ., 1380 E. 6th St., Cleveland 14, O. Bids Sept. 23. CD 9/20.

▲ **Austin Co.**, 16112 Euclid Ave., Cleveland 12, O., CA Est. **$2,600,000,** 2 story, steel, concrete SCIENCE BLDG. with 1 story WINGS, OBERLIN, O. Oberlin College, Oberlin, O. CD 9/26/57.

▲ **John Naumann & Sons, Inc.**, 364 Parker St., Toledo, O., CA (5 bidders) general contract HIGH SCHOOL, Pickle and Coy Rds., OREGON, O. Catholic Diocese of Toledo, Rehring, 2544 Parkwood St., Toledo, O. Total est. **$1,000,000.** CD 7/8;

Robert F. Farley, Inc., 1821 Spencer St., Toledo, O., CA, mechanical contract CHURCH (Oregon, O.);

Rogers Electric Service, 527 Conrad St., Toledo, O., CA, electrical contract CHURCH (Oregon, O.).

▲ **Saks & Holdberg**, 6354 Pearl Rd., Parma Heights, O., Owner Builds, **$1,500,000,** 75 Yorktown Colony HOMES, on 35 acres, southwest corner York Rd. and Kingsdale Blvd., PARMA HEIGHTS, O. CD 8/22.

▲ **Encrete, Inc.**, 2360 W. Dorothy Lane, Dayton, O., CA Est. **$1,600,000,** design and constr. colonial-style SHOPPING CENTER, SIDNEY, O. Dybvig & Frydman, Talbott Bldg., Dayton, O.

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

▲† **Arkansas**—BA 11/7—U. S. Eng., Gay Bldg., Little Rock, Ark., two 62,000 hp. turbines (Power Units 7 and 8) for Bull Shoals Dam, Mountain Home, $1,500,000. CD 11/31/57.

▲† **Mont., Great Falls**—MISSILE LAUNCH FACILITIES—BA 12/6—U. S. Eng., 1519 S. Alaskan Way, Seattle 5, Wash., 150 missile launch facilities near Malstrom Air Force Base, incl. underground steel lined rein.-con. launch tube, 80 ft. deep with underground rein.-con. annular equipment area, prefabricated metal support bldg., trolley beam and hoist, grading, access road, culverts, cattle guards and chain link fencing, diesel electric generator and water chiller with air cooled condenser, 15 launch control facilities, underground rein.-con. control center connected to above ground support bldg., water supply and sewage treatment facilities, equip. incl. oxygen generator, water storage tank, kitchen equipment, diesel electric generators, water chiller, air cooled condensers, air handling unit and blast damper, for Corps of Engineers, Ballistic Missile, 9610 Bellanca Ave., Los Angeles 45, Calif. $40,000,000. CD 9/16.

BUILDINGS—BA

▲ **Mo., Raytown**—RESIDENCE—BA 10/19—Jackson Ave. Christian Church Housing Corp., 1635 Jackson, Kansas City, Mo., 10 story 60 x 135 ft., masonry exterior air-conditioned Frank and Mary Bowen Memorial Residence. $1,000,000. Ramsey & Reeves, 882 S. Lipan, Denver, Colo., archts. Hal Stonebraker, 7134 W. 80 St., Overland Park, Kan., assoc. archt. CD 4/20.

▲ **Tex., Georgetown**—HOME FOR THE AGED—BA 10/25—Central Texas Conference of the Methodist Church, Wesleyan Home for the Aged, $1,200,000. Page, Southerland & Page, 602 West Ave., Austin, archts. CD 8/21/58.

BUILDINGS—SLC

▲ **Tex., Dallas**—SCHOOL—Catholic Diocese of Dallas, Fort Worth, 2120 Kidwell St., soon lets contract Bishop Dunne High School, $1,000,000. Extended date. Harwood K. Smith & Partners, 506 Southland Center, prin. archts. Broad & Nelson, 1327 Mercantile Dallas Bldg., archts. CD 6/15.

HEAVY CONSTRUCTION—LB & CA

▲† **Cook Constr. Co.**, Hy. 80, Jackson, Miss., LB **$1,418,400,** est. $1,570,265, First Stage, embankment and outlet works Council Grove Dam, Grand (Neosho)

(Continued on page 113)

A NEW NAME
FOR CONCRETE FORMS

SIMPLEX-WACO

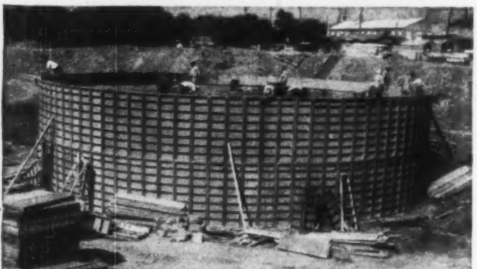
Self-Aligning

HEAVY DUTY CONCRETE FORMS

The name is new because Simplex Forms System, Inc. has purchased the concrete forms division of Waco Manufacturing Co.! And, while the basic Waco forms design is the same, you can count on years of Simplex experience to bring you the finest in quality and workmanship in Simplex-Waco forms.

Ideal for all types of concrete forming, these rugged, flexible forms will now be available on a wider scope through greater distribution.

Whether you buy or rent Simplex-Waco forms, you'll find that their built-in quality, standardized hardware, and proved durability will pay off in smooth, accurate walls job after job. Send for complete details today.



AN OUTSTANDING EXAMPLE
OF SIMPLEX-WACO SIMPLICITY

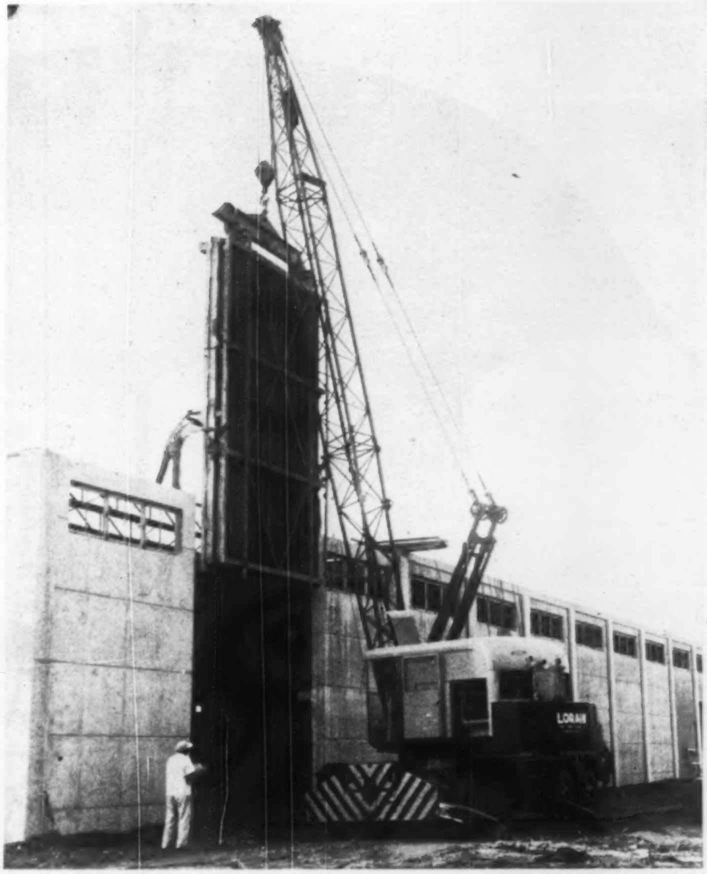
Approximately 6,000 feet of Simplex-Waco concrete forms were used to form the inside and outside walls of this ¼ billion gallon water storage tank in Dallas, Texas. Because of fewer loose hardware parts, storage for wedges in panels, and an exclusive alignment slot, these steel reinforced panels were securely erected in a minimum of time.

CHOICE AREAS AVAILABLE FOR DEALERS OR DISTRIBUTORS

SIMPLEX INDUSTRIAL FORMS, INC.
SUBSIDIARY OF SIMPLEX FORMS SYSTEM, INC.
5627 Industrial Avenue
Rockford (Loves Park) Illinois

"Tilt-Frame" method used to erect 14 buildings. In a patented process, developed by Garmon Construction Company of Fort Worth, reinforced concrete wall sections are poured into steel frames and put in place less than 24 hours after pouring, cure on the job. Fast, "Power-Set" Outriggers team up perfectly with this fast construction procedure.

Moto-Crane moves up fast as building grows. "Power-Set" Outriggers are partially retracted for ground clearance in 20 seconds. The Moto-Crane moves along for the next lift, and the outriggers are set in another 20 seconds. Maximum capacity and stability for every lift . . . no lost time.



MOTO-CRANE SETS OUTRIGGERS IN 56 SECONDS TO ERECT CONCRETE WALL SECTIONS

"Power-Set"* Outriggers—Lorain's pace-setting development—speed building at Richland Industrial Park in Fort Worth, Texas.

When Gorbett Brothers of Fort Worth, owner of five Lorains, moves in with a 35-ton Lorain Moto-Crane MC-530W to erect reinforced concrete wall sections, the operator can position the "Power-Set" Outriggers in less than a minute. During an 8-hour day this Moto-Crane handles 16 twenty-ton panels. This means many moves a day with a new outrigger set-up each time . . . but it is a breeze with Lorain "Power-Set" Outriggers.

Quick leveling in tight quarters—Each outrigger is independently controlled . . . adjusts to proper spread for working alongside walls. Each adjusts automatically to sloping or uneven ground. Machine is always level.

Positive security with wedge locks—After the four independently controlled and hydraulically powered curved beams move into position, wedge locks automatically take over. No hydraulic pressure is needed to hold outrigger beams in the extended working position.

A Lorain Moto-Crane is the fastest way to get *to* the job. Lorain "Power-Set" Outriggers provide the fastest way to move around *on* the job. See your Lorain distributor today, or write direct for a booklet.

*Patented

THE THEW SHOVEL COMPANY, LORAIN, OHIO

LORAIN® ON THE MOVE

PLANTS in Lorain, Elyria and Bucyrus, Ohio . . . **PRODUCTS**—Power shovels, cranes, draglines, clamshells, and hoes on crawler mountings from ⅜- to 2½-yard capacity. Cranes from 7 to 80 tons . . . on crawlers, and as rubber-tire Moto-Cranes, and Self-Propelled Cranes. Rubber tire front-end Moto-Loaders in 1¾- and 2-yard models . . . **OUTLETS**—Lorain products sold and serviced by 249 distributor outlets throughout the world.

First man on the job—after your Travelers agent

Call your Travelers man while your new construction is still a castle in the air. The Travelers umbrella of protection offers more than complete insurance coverage. It includes the services of experts who can help you secure your job against costly accidents and delays.

Bonds, fast and right: Your Travelers man is an expert on requirements—federal, state and local—gets bonds to responsible contractors *fast*.

Workmen's Compensation and Public Liability includes the services of Travelers safety experts who help you rout out hidden hazards, keep accidents in check. Travelers-insured jobs show consistently low accident figures.

Builders' Risk Insurance and Contractors' Equipment Floaters are backed by a claims organization that can give you prompt attention anywhere in the United States.

For *complete* protection and expert service that help you fulfill your commitments on time—with increased safety—call your Travelers Agent when you *start* to plan. His number is in the Yellow Pages of your phone book.

THE TRAVELERS

Insurance Companies HARTFORD 15, CONN.

(Continued from page 110)

River, ENG-34-066-61-7, KANSAS. U. S. Eng., P. O. Box 61, Tulsa, Okla. Bids Sept. 29. CD 9/1.

▲ **TEXAS**—State Hwy. Comn., Austin,

Tex.—**Borsberry Constr. Co.**, Box 4257, El Paso, Tex., CA **$1,107,938**, grading, strs., surf. 28.626 mi., Hy RM 170, proj. R 957-9-1, Presidio and Brewster Counties;

Tex.—**C. B. Darby & Co., Inc.**, Box 467, Pharr, Tex, CA **$659,259**, grading, strs., conc. pvt. widen fdn. crs. and b. conc. pvt., 10.903 mi., Hy. St 139, Proj. S 304(3), Austin Co.;

Tex.—**Dean Word Co.**, Box 330, New Braunfels, Tex. CA **$1,084,489**, grading, strs., fl. base and b. conc. pvt. 5.568 mi. Hy. US 183, Proj F 257(11), etc. Williamson and Travis Counties, Grand total $2,851,686. CD 9/26, under LB.

BUILDINGS—LB & CA

▲ **Rinderknecht Constr. Co.**, 113 F Ave. N. W., Cedar Rapids, Iowa, CA Est. **$1,000,000**, 2 story, 162 unit HOLIDAY INN MOTEL, swimming pool, 350 car parking, Northeast Hy. 30 and Hy. 149, CEDAR RAPIDS, IOWA. Williams Corp., c/o Robert Brock, VFW Bldg., Topeka, Kan. CD 7/29.

▲ **Ringland-Johnson, Inc.**, 8202 Locust St., Des Moines, Iowa, CA **$1,006,965**, multi-story, 70,000 sq. ft. rein. con. masonry NURSES EDUCATION BLDG., DES MOINES. IOWA. Iowa Methodist Hospital, Hospital Admin., 1200 Pleasant St., Des Moines, Iowa, Bids Sept. 14. CD 9/21, under LB.

▲ **Swenson Constr. Co.**, 3305 Terrace, Kansas City, Mo., CA **$2,000,000**, 1 story, 120,000 sq. ft. concrete block, brick WAREHOUSE, 15,000 sq. ft. OFFICE, KANSAS City, MO. McPike, Inc., 7 & Central, Kansas City, Mo. Kivett & Myers & McCallum, 1016 Baltimore, Kansas City, Mo., archts.

▲ **Del Webb Constr. Co.**, P. O. Box 4166, Phoenix, Ariz., CA **$1,850,000**, 150,000 sq. ft. concrete frame, masonry, MOTEL, TOWER, RESTAURANT, DALLAS, TEX. Del E. Webb Motor Hotel Co. Del Webb Constr. Co. Box 4066, Phoenix, Ariz. CD 7/8.

▲ **J. B. Belin & Associates**, 6539 S. Park St., Houston, Tex., Owner Builds, **$6,355,000**, 425 DWELLINGS, Oates Prairie, HOUSTON, TEX.

FAR WEST

HEAVY CONSTRUCTION—LB & CA

▲ **Williams Bros.**, National Bank of Tulsa Bldg., Tulsa, Okla., CA, 225 mi. 6 and 8 in. petroleum products pipe line from Colton thru Cajon Pass to Barstow, Calif. to Las Vegas, Nev., CALIFORNIA and NEVADA. Calney Pipeline Co., c/o Union Pacific RR Co., 1416 Dodge St., Omaha 2, Neb.

▲ **H. C. Price Co.**, Bartlesville, Okla., CA 291 mi. 36 in. steel gas pipe line from Antioch, Calif. to Oregon border and 146 mi. from Rosalia, Wash. to Idaho-British Columbia Border, CALIFORNIA-OREGON-IDAHO-WASHINGTON-BRITISH COLUMBIA and ALBERTA. Total cost **$330,000,000**. Pacific Gas Transmission Co., affiliate Pacific Gas & Electric Co., 245 Market St., San Francisco, Calif. Bechtel Corp., 220 Bush St., San Francisco, Calif., consult. engrs. CD 7/24/57.

Western Pipeline, Inc., F. V. W. Bldg., Austin, Tex. and **J. P. Neill & Co., Inc.**, Meadows Bldg., Dallas, Tex., CA, 468 mi. from California-Oregon border to Rosalia, Wash., for Pacific Gas Transmission Co. (California-Oregon-Idaho-Washington-British Columbia and Alberta).

Price-Poole of Canada, Ltd., (**H. C. Price of Canada Ltd.**, Calgary, Alta., & **Poole Constr. Ltd.**, Edmonton, Alta.), CA 107 mi. pipe line in British Columbia, for Alberta Natural Gas Co., Natural Gas Bldg., Calgary, Alta. (California-Oregon-Idaho-Washington-British Columbia and Alberta).

BUILDINGS—LB & CA

▲ **Beckner Constr. Co.**, 2650 River Ave., San Gabriel, Calif., CA **$2,070,100**, (10 bidders) Magnolia HIGH SCHOOL. ANAHEIM, CALIF. Anaheim Union High School Dist., 123 N. Citron Ave., Anaheim, Calif. Bids Sept. 20. CD 9/22, under LB.

▲ **Emblem Homes, Inc.**, 8906 W. Olympic Blvd., Beverly Hills, Calif., CA **$2,621,420**, 235 HOMES, Tract 24709, Blithedale St., Thornlake Ave., Decca St., Belshire Ave. and others, BELLFLOWER, CALIF. Norwalk Developers, 8906 W. Olympic Blvd., Beverly Hills, Calif.

▲ **Geo. A. Fuller**, 3100 W. 8 St., Los Angeles, Calif., CA **$1,500,000**, concrete, steel ELEVATOR FACTORY, 8941 Arrow Hy., Cucamonga Vineyard Tract, CUCAMONGA, CALIF. Otis Elevator Co., c/o F. J. Lesinsky, 1 Beach St., San Francisco, Calif. C. Beelman, 7421 Beverly Blvd., Los Angeles, Calif., archt. CD 8/30.

▲ **Irexford Constr. Co.**, 8240 Santa Monica Blvd., Los Angeles, Calif., LB **$2,586,000**, (6 bidders), Santiago HIGH SCHOOL, GARDEN GROVE, CALIF. Garden Grove High School Dist., 11271 Sanford St., Garden Grove, Calif. Bids Sept. 26. CD 9/6.

▲ **Crown Constr. Co.**, 5059 W. Pico Blvd., Los Angeles 19, Calif., CA **$2,363,711**, THEATER ARTS BLDG., University of California, LOS ANGELES, CALIF. Bd Regents, University of California, 405 Hilgard Ave., Los Angeles, Calif. Bids Sept. 1. CD 9/8, under LB.

CANADA

HEAVY CONSTRUCTION—LB & CA

▲ **Anglin Norcross Ontario Ltd.**, 224 Davenport Rd., Toronto, Ont., LB **$1,002,500**, structural glass, Alt. LB **$885,000**, porcelain enamel, Alt. LB **$952,000**, tile, for Contract UF-3 Station finishes on four stations, Stage 1, University Ave. Subway; LB **$910,000**, Contract U-2, station finishes on four stations, Stage 1, University Ave. Subway, TORONTO, ONT. Toronto Transit Comn., 1900 Yonge St., Toronto, Ont. Bids Sept. 26. CD 8/3.

LATIN AMERICA

BUILDINGS—LB & CA

▲ **Fluor-Schuytvlot N.V.**, Haarlem, Holland (sub. The Fluor Corp. Ltd., Los Angeles, Calif., U.S.A.), CA Est. **$9,800,000** OIL REFINERY, ACAJUTLA, EL SALVADOR. Refineria Shell de El Salvador S.A. (Shell International Petroleum Co., 50 W. 50 St., New York, N. Y.).

AMERICANS ABROAD

BUILDINGS—LB & CA

▲ **Fluor-Schuytvlot, N.V.**, Haarlem, Holland (sub. Fluor Corp. Ltd., 2500 South Atlantic Blvd., Los Angeles 22, Calif., U.S.A.), CA Est. **$5,000,000**, design and construct 20,000 bbls. per day UNIFINER-PLATFORMER at refinery, ABADAN, IRAN. Iraanse Aardolie Raffinage Maatschappij (Iranian Oil Refining Co.), Tehran, Iran.

FOREIGN

HEAVY CONSTRUCTION—BA

▲ **England**—BA 12/20—Ministry of Transportation, London,

fdns. and superstructure, 3,240 ft. steel suspension bridge over Severn River and Aust Viaduct, approach roads, Contr. 2 between Aust, Gloucestershire and Beachley, Monmouthshire. Total cost $44,500,000.

Contr. 1 has been awarded to A.C.D. Bridge Co. (Sir William Arrol & Co. Ltd., Artillery House, Artillery Rd., London SW 1, Cleveland Bridge & Engineering Co. Ltd., 933 North Circular Dr., London NW 2, and Dorman Long Bridge & Engineering Co., Ltd., Zetland Rd., Middleborough, Yorkshire. Other work to be bid includes Wye Bridge and various approach roads. Mott, Hay & Anderson, Iddesleigh House, London SW 1, and Freeman, Fox & Partners are structural engineers. Sir Percy Thomas is architect.

PROPOSED PROJECTS

WATER SUPPLY

▲ **Alaska, Fairbanks**—City, City Hall, treatment plant and reservoir. **$2,380,000**. Alaska Architectural & Engineering Co., Fairbanks, Alaska, and Stevens & Thompson, 2234 S. W. 5 Ave., Portland, Ore., consult. engrs. Bids to be called next year. CD 5/6.

▲ **Alaska, Fairbanks**—City, City Hall, completion of water distr. sys. within city. **$6,000,000**. Alaska Architectural & Engineering Co., Fairbanks, Alaska, and Stevens & Thompson, 2234 S. W. 5 Ave. Portland, Ore., consult. engrs. Bids to be called next year. CD 5/9.

▲ **Calif., Santa Fe Springs**—City Council, City Hall, **$6,100,000** bond election Oct. 25, water supply.

▲ **Wash., Alderwood Manor**—Alderwood Water Dist., 8.5 mi. 30 in. water supply line to Everett and 15 m.g.d. pumping unit, **$2,000,000**.

SEWERS, WASTE DISPOSAL

▲ **Calif., Napa**—Napa County, Courthouse, storm drainage sys. **$2,467,300**.

▲ **Colo., Pueblo**—City, City Hall, (P-Colo-3024) storm sewers, **$2,678,000**.

▲ **Mo., Kansas City**—City, City Hall, **$75,000,000** bond election Nov. 8, sewage treatment plant to clean up Missouri River, trunk lines to new areas. Black & Veatch, 1500 Meadow Lake Parkway, Kansas City 14, Mo., engrs.

BRIDGES

▲ **Tennessee**—Tennessee Valley Authority, New Sprankles Bldg., Knoxville, 3,671 ft. bridge across Pickwick Landing Dam, **$5,000,000**. CD 1/12.

STREETS AND ROADS

▲ **PENNSYLVANIA** — Pa. Turnpike Comn., Box 531, Harrisburg,

Bedford Co.—interchange at Bedford to replace existing facility, **$1,000,000**.

Somerset Co.—interchange at Somerset to replace present facility, **$1,000,000**.

Donegal Co.—interchange at Donegal to replace existing facility, **$1,000,000**.

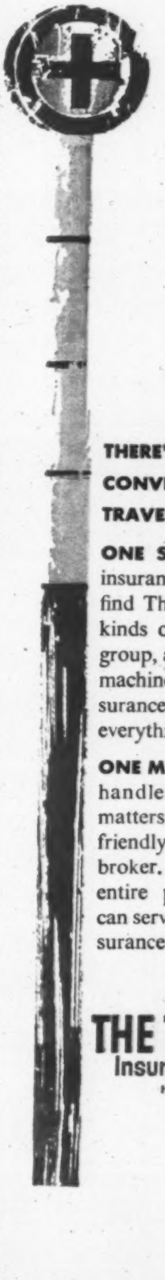
New Station Co.—interchange at New Station to replace existing facility, **$1,000,000**. Cost revised.

EARTHWORK. WATERWAYS

▲ **California**—South Sutter Water Dist., P. O. Box 62, East Nicolaus, enlarge Camp Far West Dam and Reservoir, distr. sys., diversion works, Camp Far West Proj., Bear River, Yuba Co. **$6,136,600**. McCreary-Korestsky Engineers, 1140 Howard St., San Francisco, and T. H. McGuire & Son, P. O. Box 1118, Grass Valley, consult. engrs.

▲† **North Carolina**—U. S. Eng., 209 Kin St., Charleston, S. C., imprv. Wilkesboro Reservoir, **$3,300,000**.

▲† **North Dakota**—U. S. Eng., 1709 Jackson St., Omaha, Neb., continuing constr., Garrison Reservoir, **$4,000,000**. CD 9/19/58.



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▲† **Ohio and West Virginia**—U. S. Eng., 925 New Federal Bldg., Pittsburgh 19, Pa., New Cumberland locks and dam, Ohio River, **$6,180,000.** CD 9/29/59.

▲† **Ohio and West Virginia**—U. S. Eng., 925 New Federal Bldg., Pittsburgh, Pa., Pike Island Locks and Dam, Ohio River, **$9,000,000.**

▲† **Ohio**—U. S. Eng., 502 8th St., Huntington, W. Va., Dillon Reservoir, **$4,223,000.** CD 9/13/56.

▲† **Ohio**—U. S. Eng., 925 New Federal Bldg., Pittsburgh 19, Pa., West Branch Mahoning River Reservoir, **$2,200,000.** CD 9/26/58.

▲† **Oklahoma**—U. S. Eng., P. O. Box 61, Tulsa, Eufaula Reservoir, Canadian River, **$20,700,000.**

▲† **Oklahoma**—U. S. Eng., Box 61, Tulsa, Oologah Reservoir, Verdigris River, Arkansas River Basin, **$3,700,000.** CD 9/28/59.

▲† **Oklahoma**—U. S. Eng., Box 61, Tulsa, Keystone Reservoir, Arkansas River, **$17,400,000.**

▲† **Oregon**—U. S. Eng., Pittock Block, Portland, dredging Rogue River Harbor at Gold Beach, **$2,018,000.** CD 9/30/59.

▲† **Oregon**—U. S. Eng., Pittock Block, Portland, Hills Creek Reservoir, Middle Fork, Willamette River, **$10,500,000.** CD 9/29/59.

▲† **Oregon**—U. S. Eng., 628 Pittock Block, Portland, Cougar Reservoir, south fork McKenzie River, **$12,300,000.** CD 9/28/59.

▲† **Oregon and Washington**—U. S. Eng., Pittock Block, Portland, The Dalles Lock and Dam, Columbia River, **$1,900,000.** CD 9/30/59.

▲† **Oregon and Washington**—U. S. Eng., City-County Airport, Walla Walla, Wash., John Day Lock and Dam Columbia River, **$33,344,300.**

▲† **South Dakota**—U. S. Eng., 1709 Jackson St., Omaha 2, Neb., Big Bend Reservoir, Missouri River, **$10,000,000.** CD 7/27.

▲† **South Dakota**—U. S. Eng., 1709 Jackson St., Omaha 2. Neb., Oahe Reservoir, Missouri River, **$53,500,000.** CD 9/29/59.

AIRPORTS

▲† **Ark., Little Rock**—LAUNCHING BASES—U. S. Eng., 300 Broadway, Titan Launching bases, Little Rock Air Base, **$65,000,000.**

▲† **Calif., Lompoc**—CALIBRATION LABORATORY, etc. —U. S. Eng., 751 Figueroa St., Los Angeles, calibration laboratory, missile assembly bldg., modification missile launching training facility, Vandenberg Air Force Base. **$18,650,000** funds released. CD 4/27.

▲ **Nev., Las Vegas**—JET AIRPORT, etc.—Clark Co., Las Vegas, plans by Welton Becket & Assocs., 5657 Wilshire Blvd., Los Angeles 36, Calif., and John Replogle, Las Vegas, jet airport, terminal bldg., runways, McCarran Field. **$4,500,000.**

UNCLASSIFIED

▲ **Calif., Santa Rosa**—HARBOR DEVELOPMENT—Bd. Supervs. Sonoma County, County Admin. Center, Santa Rosa, bond election Nov. 8, Bodega Harbor development, **$2,000,000.** CD 12/30/58.

▲ **Fla., St. Petersburg**—SPORTS STADIUM, etc.—City, City Hall, plans by Architects Associated, City, City Hall, sports stadium, **$1,500,000;** Pier, Unit 1 service club bldg., parking areas, **$1,000,000;** Senior Citizens Club, **$900,000;** New Island by fill with bathing facilities, etc., two bridges, parking, **$1,500,000;** Lassing Park, incl. 35 acre fill and beach development, **$500,000;** Central Yacht Basin and utilities, water supply, stores, etc., **$300,000;** Sequarium, swimming pools, parking, play areas, **$1,500,000;** marinas and launching ramps, **$300,000.**

▲ **Illinois and Wisconsin**—PUMPING STATIONS, etc.—Mid-America Pipeline, Katy Bldg., Dallas, Tex., 405 mi. 10 in. pipe line, three pumping stations between Chicago, Ill. and Superior, Wis. **$21,000,000.**

▲ **Wash., Seattle** — SPORTS STADIUM — King Co., County-City Bldg., bond election Nov. 8, professional sports stadium, **$15,000,000.**

PUBLIC BUILDINGS

▲ **Calif., Pasadena**—JUNIOR COLLEGE, etc.—Pasadena City School Dist., 351 S. Hudson Ave., **$13,500,000** bond election Nov. 8, Junior College and high school. CD 7/9/58.

▲ **Calif., Sacramento**—SCHOOL—Sacramento City Unified School Dist., 1619 N St., plans by Satterlee & Tomich, 1521 I St., and Raymond R. Franceschi, 2015 J St., Luther Burbank High School. **$3,900,000.** CD 11/9/59.

▲ **Calif., San Jose**—HIGH SCHOOL—Eastside Union High School Dist., 57 N. White Rd., plans by Walter, Price & Porter, 2060 Clarmar Way, Piedmont Hills High School. **$2,000,000.** CD 2/15.

▲ **Calif., Santa Rosa**—HALL OF JUSTICE, etc.—Sonoma Co., County Admin. Center, bond election Nov. 8, Hall of Justice and Jail; Fiscal Bldg., office bldg. and airport administrative bldg. **$5,450,000.** J. Clarence Felciano, P. O. Box 424, archt. for Hall of Justice and Jail. Steele & Van Dyk, 3960 Montgomery, Santa Rosa, archts. for Fiscal Bldg.

▲ **Calif., Upland**—SCHOOLS—Upland Elementary School Dist., 713 N. 3 Ave., **$2,000,000** bond election Dec. 8, schools.

▲ **Colo., Denver** — MUSEUM, etc. — State of Colorado, State Planning Div., State Capitol, plans by Smith & Hegner, 817-17 St., 4 story museum and office for Game & Fish Dpt., E. Colfax and Lincoln Sts. **$2,500,000.** CD 2/11.

▲ **Conn., Windsor Locks**—HIGH SCHOOL—Town, Town Hall, high school, S. Elm St. **$2,000,000.**

▲ **Fla., St. Petersburg**—CONVENTION HALL—City, City Hall, plans by Architects Associated, City, City Hall, convention hall, **$2,500,000.**

▲ **Ind., New Albany**—HOSPITAL—New Albany Floyd Co. Building Auth., 212 Elsby Bldg., plans by Walker, Applegate, Oaks & Ritz, New Albany, 4 story Floyd County Memorial Hospital addn., **$3,605,000.** CD 9/27.

▲ **Mich., Ann Arbor**—RESEARCH INSTITUTE—University of Michigan Medical Center, 1345 University Hospital, 5 story Kresge Hearing Research Institute. **$1,750,000.** CD 10/8/57.

▲ **Mich., Detroit**—SCHOOLS—Bd. Educ., 1354 Broadway, Zone 26, plans by Giffels & Rossetti, 1000 Marquette Bldg., Zone 26, Ford School addn., 20000 Evergreen Ave., **$3,000,000;** plans by J. Ivan Dise, 2631 Woodward, Zone 1, Mark Twain School addn., 11952 Peters Ave., **$600,000;** plans by Smith, Hynchman & Grylls, 3107 W. Grand Blvd., Zone 2, Osborn School addn., 11600 E. 7-Mile Rd., **$3,000,000;** plans by Shreve-Walker Assoc., 4612 Woodward, Zone 1, Yost School addn., 11600 E. 7-Mile Rd., **$500,000.** CD 4/9/59.

▲ **Minn., St. Louis Park**—SCHOOL—Bd. Educ., **$2,250,000** bond election Dec. 6, high school addn. and remodeling part of Central Junior High School.

▲ **Mo., St. Louis**—SCHOOLS—Bd. Educ., 911 Locust St., Zone 1, **$29,535,000** bond election Nov. 8, 14 elementary schools, high school, northwestern part of city, McKinley High School addn., and 11 elementary schools addns., etc. CD 5/24.

▲ **N. Y., New York**—DOUGLASS HOUSES—New York City Housing Auth., 299 Broadway, Zone 7, 15 story Douglass Houses addn., Amsterdam Ave., W. 102 and 103 Sts. **$2,000,000.**

▲ **Ore., Portland**—SCIENCE—Bd. Higher Educ., Box 5157 Eugene, plans by Skidmore, Owings & Merrill, 2040 S.W. Jefferson St., science bldg., Portland State College. **$2,340,000.** CD 11/27/59.

▲ **Pa., Bloomsburg**—DORMITORIES, etc.—General State Authority, 18th and Herr Sts., Harrisburg, plans by Eshbach, Pullinger, Stevens & Bruder, 1519 Walnut St., Phila., two dormitories, Proj. 401-7, **$1,800,000,** CD 3/14; heatitng plant addn., replace utilities, replace water mains, **$620,000,** Bloomsburg State College. L. P. Kooken Co., 233 Carlisle St., New Oxford, consult. engrs. CD 10/29.

▲ **Pa., California**—DORMITORIES—General State Authority, 18th and Herr Sts., Harrisburg, plans by Michael Cozza Associates, 2125 Walton Ave., Pittsburgh, two dormitories, California (Pa.) State College, Proj. 402-10, **$1,640,000.** A. F. Jones, c/o owner, ch. engr. CD 3/15 and 3/11.

▲ **Pa., Indiana**—DORMITORIES—General State Authority, 18th and Herr Sts., Harrisburg, three 3 story bsmnt. dormitories, Indiana State College, Proj. 407-17, **$2,000,000.** CD 3/17.

▲ **Pa., Phila.**—LIBRARY—Phila. Procurement Dpt., City Hall Annex, plans by Geddes Brecher & Qualls, 258 S. Van Pelt St., library, Cottman and Oakland. **$1,650,000.** CD 5/12/58.

▲ **Pa., Phila.**—HOSPITAL—General State Authority, 18th and Herr Sts., Harrisburg, plans by Bellante & Clauss, Suburban Sta. Bldg., and A. F. Orefice, 843 N. 19th St., 250-bed wing, Henry R. Landis State Hospital addn., Proj. 305-4. **$1,600,000.** CD 9/22.

▲ **Tex., LaMarque** — HOSPITAL — Galveston County, Memorial Hospital, Courthouse, Galveston, plans by Page, Southerland & Page, and Whit Phillips, Assoc. Archts. & Engrs., archts.-engrs., 602 West Ave., Austin, 5 story rein.-con. hospital addn., **$3,100,000.** CD 11/16/59.

▲ **Vt., Burlington** — GYMNASIUM, etc. — University of Vermont, Waterman St., plans by Freeman, French & Freeman, 158 Bank St., gymnasium and field house, **$2,000,000-$3,000,000.** Constr. 1961.

▲ **Va., Williamsburg**—CONVALESCENT BLDGS.—Virginia State Hospital Bd., 9 North 12th St., Richmond, plans by Bernard B. Spigel, Kresge Bldg., Norfolk, Zone 10, four 1 story, 84 patients each, masonry, concrete slab, bar joist roof constr., mechanical included, Acute Convalescent Bldgs., Eastern State Hospital, **$1,680,000.** CD 6/3.

▲ **Wash., Seattle**—HOUSING—University of Washington, Seattle, Zone 5, plans by Kirk, Wallace & McKinley & Assocs., 615 Lakeview Blvd., 600 men student housing, **$3,000,000.** Constr. 1961. CD 10/26.

▲ **Wash., Tacoma**—HIGH SCHOOL—Clover Park School Dist., 5214 Steilacoom Blvd., S. W., $490,000 bond election Nov. 8, high school, **$2,825,000.** CD 9/23.

▲† **Wyo., Cheyenne**—HOUSING—U. S. Eng., 1709 Jackson St., Omaha, Neb., 100 unit Capehart family housing, Warrens Air Force Base, **$1,750,000.**

▲ **Man., Fort Garry**—ANIMAL SCIENCE—University of Manitoba, plans by Smith, Carter, Searle Assocs., 65 Dewdney Ave., Winnipeg, animal science, Fort Garry Campus. **$2,000,000.**

COMMERCIAL BUILDINGS

▲ **Ark., Hot Springs**—MOTOR HOTEL—Samuel H. Kirsch, 368 Central Ave., motor hotel. **$2,000,000.**

▲ **Calif., Daly City**—HOSPITAL—Mary's Help Hospital, 145 Guerrero St., San Francisco, plans by Stone, Marraccini & Patterson Architects, 536 Mission St., San Francisco, hospital, 7½ acre site.**$10,000,000.** Constr. 1961.

▲ **Colo., Lakewood**—DEPARTMENT STORE—King's of Boston, 910 Commonwealth Ave., Boston, Mass., 70,000 sq. ft. department store in Alameda Shopping Center. Approx. **$2,000,000.**

▲ **Hawaii, Honolulu**—OFFICE—R. C. Yap & Co., 436 Piikoi St., plans by I. M. Pei & Assocs., 385 Madison Ave., New York, N. Y., 30 story, 250,000 sq. ft. Metropolitan Tower Office. **$10,000,000.**

▲ **Hawaii, Waikiki**—CO-OPERATIVE HOTEL—Queen Development Co., 627 South St., Honolulu, three 14 story cooperative hotel. **$2,500,000.**

▲ **Ind., Indianapolis**—APARTMENT—Senior Citizens Foundation, Inc., c/o McGuire & Shook, Compton, Richey & Assocs., archts., I. S. T. S. Center, Indianapolis, 12 story, 170 unit apartment house for aged, southwest corner North and Alabama Sts. **$2,000,000.**

▲ **Minn., Minneapolis**—HOTEL—Sheraton Corp. of America, 470 Atlantic Ave., Boston, Mass., 17 story hotel between Nicollet and Marquette Aves. and South 3 and 4 Sts., Gateway Center area. **$8,500,000.**

▲ **Minn., Minneapolis**—OFFICE—Northwestern National Life Ins. Co., 430 Oak Grove St., 4 story home office, Washington Ave. between Hennepin and Marquette Aves., Gateway Center. **$6,000,000.** CD 9/12/49.

▲ **N. Y., New York**—GYMNASIUM, etc.—Columbia University, 116 St. and Broadway, sketches by Sherwood, Mills & Smith, 65 Broad St., Stamford, Conn., and Eggers & Higgins, 100 E. 42 St., Zone 17, 3 story gymnasium and recreation center with swimming pool, Morningside Ave. **$6,000,000.** CD 1/16.

▲ **N. Y., New York**—APARTMENTS, etc.—New York University, 100 Washington Sq., Zone 3, 3 apartments (2 for faculty-married students and 1 for rental), West Broadway, Mercer, Bleecker and Houston Sts. **$15,000,000.**

▲ **Pa., Cheltenham**—RESIDENTIAL DEVELOPMENT—A. P. Orleans, 100 W. Rockland St., Phila., residential development (20) Ashbourne Rd. and New 2nd. St., **$2,000,000.**

▲ **Pa., Phila.** — APARTMENT — Owner, c/o Geddes, Brecher & Qualls, archts., 258 S. Van Pelt St., 300 unit apartment house, School House Lane, **$2,500,000.** Bids late November.

▲ **Tex., Lamesa**—DWELLINGS—Miller Development Co., Fort Worth, 46 dwellings, Northridge addn., **$610,000;** 150 dwellings, Northridge addn., **$1,800,000.** Constr. 1961.

▲ **Tex., San Antonio**—SHOPPING CENTER, etc.—DAK Corp., 747 W. Sunset Rd., shopping center, air-conditioned, masonry, Lackland Terrace Subdivision, **$5,000,000;** 200 unit motel, Lackland Terrace Subdivision, $800,000; 64-lane bowling center, Huge Lackland Terrace Subdivision, **$600,000;** hard-paved auto parking center, 5,800 auto capacity, Huge Lackland Terrace Subdivision, **$150,000.**

▲ **Wash., Anacortes** — RESORT — Skyline on Burroughs Bay, Inc., c/o Dr. A. J. Neils, Medical-Dental, Center Bldg., Bellingham, resort on Flounder's Bay, with moorage facilities, lodge, etc. **$2,000,000.**

▲ **Wash., Longview**—SHOPPING CENTER—Twin City Development Co., c/o A. Peters, 747 Commerce St., plans by R. E. Newhall, 1417-15th Ave., shopping center, 52,600 sq. ft. dept. store, 7 rein.-con. bldgs. on piling fdn., **$2,500,000.** Constr. in October.

▲ **Que., Quebec City** — SHOPPING CENTRE — Loftus, Lesser & Co., Ltd., 11 Adelaide St. W., Toronto, Ont., plans by Freedman & Petroff, 3130 Bathurst St., Toronto, Ont., c/o Fiset & Deschamps, 50 St. Jean St., shopping centre, Place Fleur-de-Lys, Blvds. Laurentien and Hamel and Dorchester St. **$7,000,000.** CD 2/15/56.

INDUSTRIAL BUILDINGS

▲ **Md., Sparrows Point**—MARINE TERMINAL—Bethlehem Steel Co., 701 E. 3 St., Bethlehem, Pa., Marine Terminal, consisting dredged 33 ft. channel from present main Baltimore Channel (Brewerton Channel) 2 mi. to 1,000 ft. ship turning basin and steel pile wharf. **$10,000,000.**

▲ **O., Mogadore**—TIRE TESTING CENTER—General Tire & Rubber Co., 1708 Englewood St., Akron, tire testing center. 33,000 sq. ft. laboratory, facilities, south side Gilchrist Rd., east of and adjacent to research center, across from Brittain warehouse. **$2,500,000.**

▲ **Tex., Austin**—PLANT—Marquette Cement Mfg. Co., 20 N. Wacker Dr., Chicago, Ill., cement mfg. plant, **$6,000,000-$10,000,000.**

▲ **Tex., Beaumont**—PLANT—Foster-Grant Co., Inc., 350 5th Ave., New York, N. Y., polyethylene plant, **$5,500,000.**

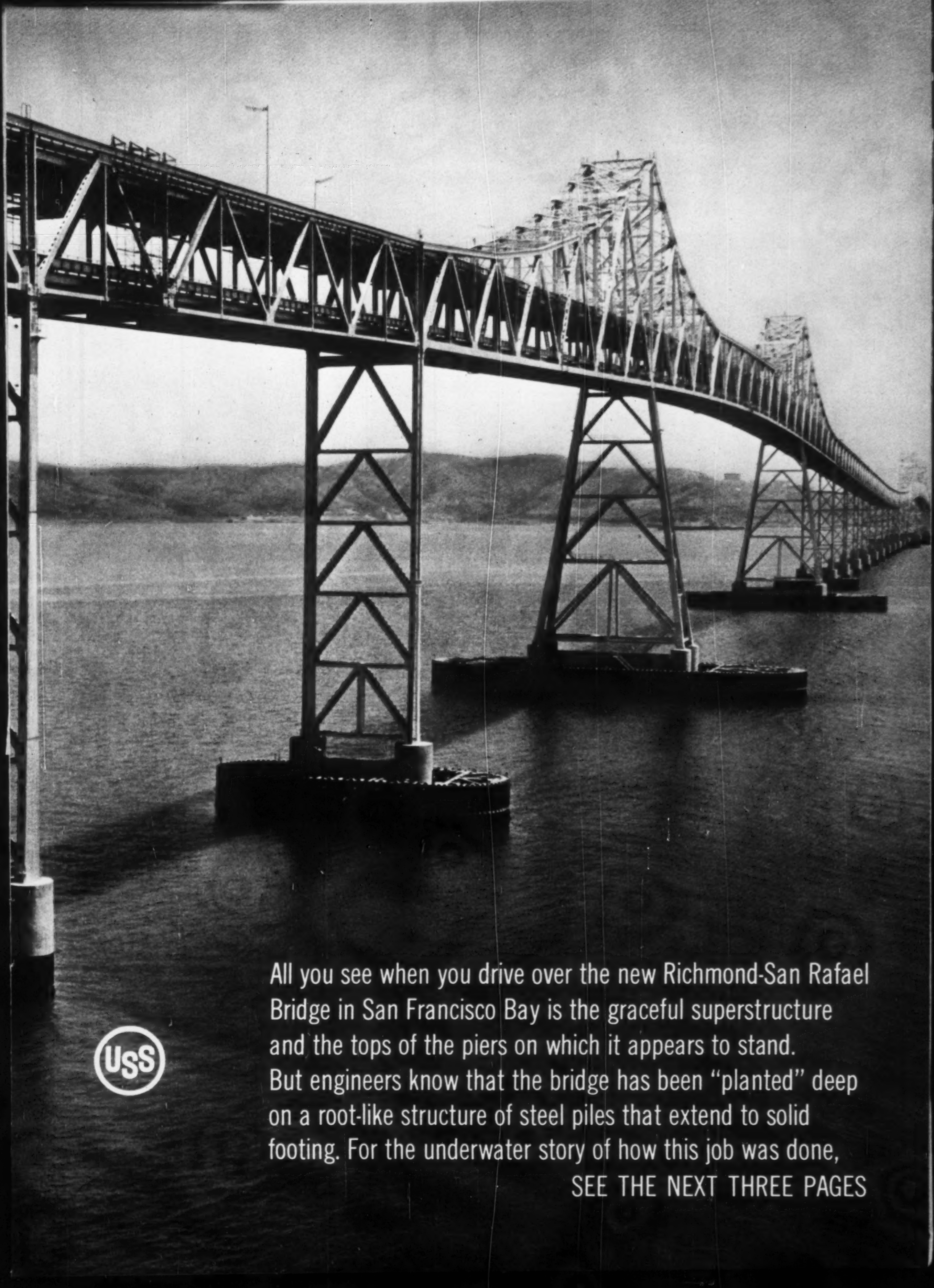
AMERICANS ABROAD

▲ **Jordan** and **Saude Arabia**—Hedjaz Railway Line, Executive Comn., Damascus, Syria, 844 kilometers Hedjaz Ry. from Ma'an in Jordan to Medina in Saudi Arabia. **$25,000,000.** Brown Engineers, International, 60 W. 55 St., New York, N. Y., U.S.A., engrs.

FOREIGN

▲ **TANGANYIKA**—Govt. of Trust Territory of Tanganyika,

Dar-es-Salaam—rebuilding 142 mi. road between Lake Victoria, ports of Mwanza and Musoma. **$1,900,000.**

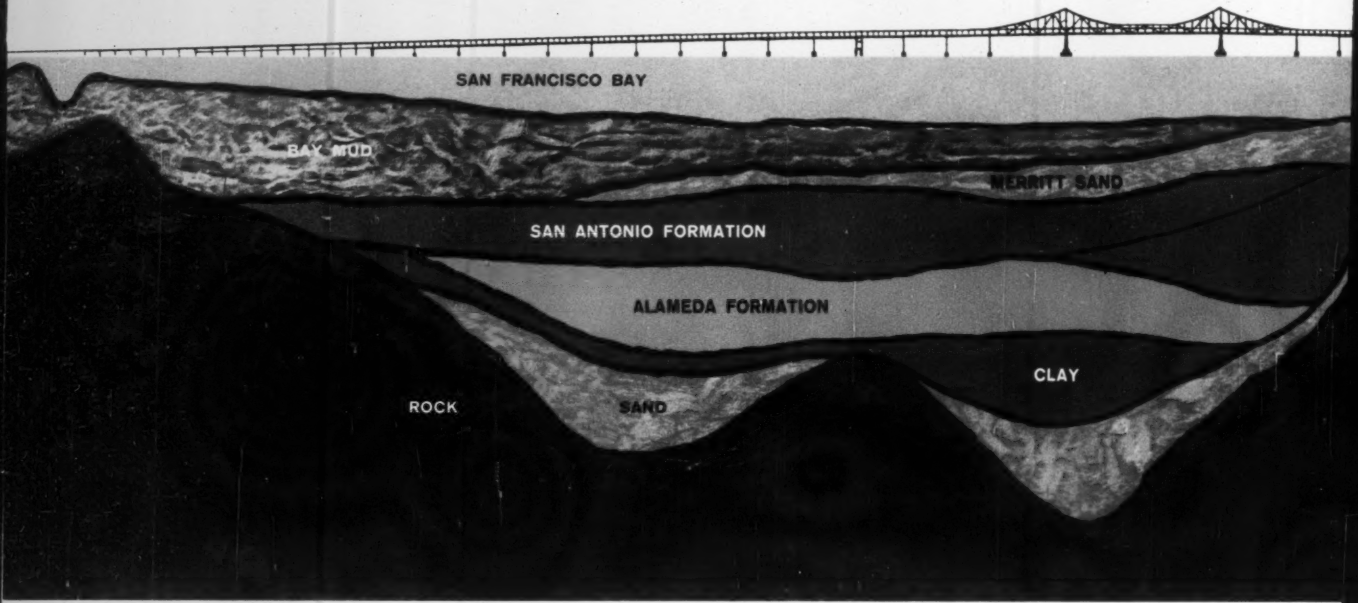


USS

All you see when you drive over the new Richmond-San Rafael Bridge in San Francisco Bay is the graceful superstructure and the tops of the piers on which it appears to stand. But engineers know that the bridge has been "planted" deep on a root-like structure of steel piles that extend to solid footing. For the underwater story of how this job was done,

SEE THE NEXT THREE PAGES

Richmond-San Rafael Bridge over San Francisco Bay—length 21,345 feet. Lower sketch shows stratification encountered and points up need for extra long piles. This bridge was built for the State of California, Department of Public Works, Division of San Francisco Bay Toll Crossings. Substructure General Contractor: Ben C. Gerwick, Inc., and Peter Kiewit Sons Company.



Problem: How to put the Richmond-
Solution: USS H-Piles under novel

The Richmond-San Rafael Bridge, just north of San Francisco, is one of the world's longest. It stretches across the bay for 21,345 feet. This makes it longer than the Mackinac Bridge and only 1,377 feet shorter than the San Francisco-Oakland Bay Bridge. The new bridge has two decks, each carrying three lanes of traffic across San Francisco Bay between Richmond and San Rafael, California.

Tests on soil samples indicated proposed loads on displacement-type piles would probably result in excessive settlement. It was decided that piles had to be driven to rock or into a deep sand-gravel stratum.

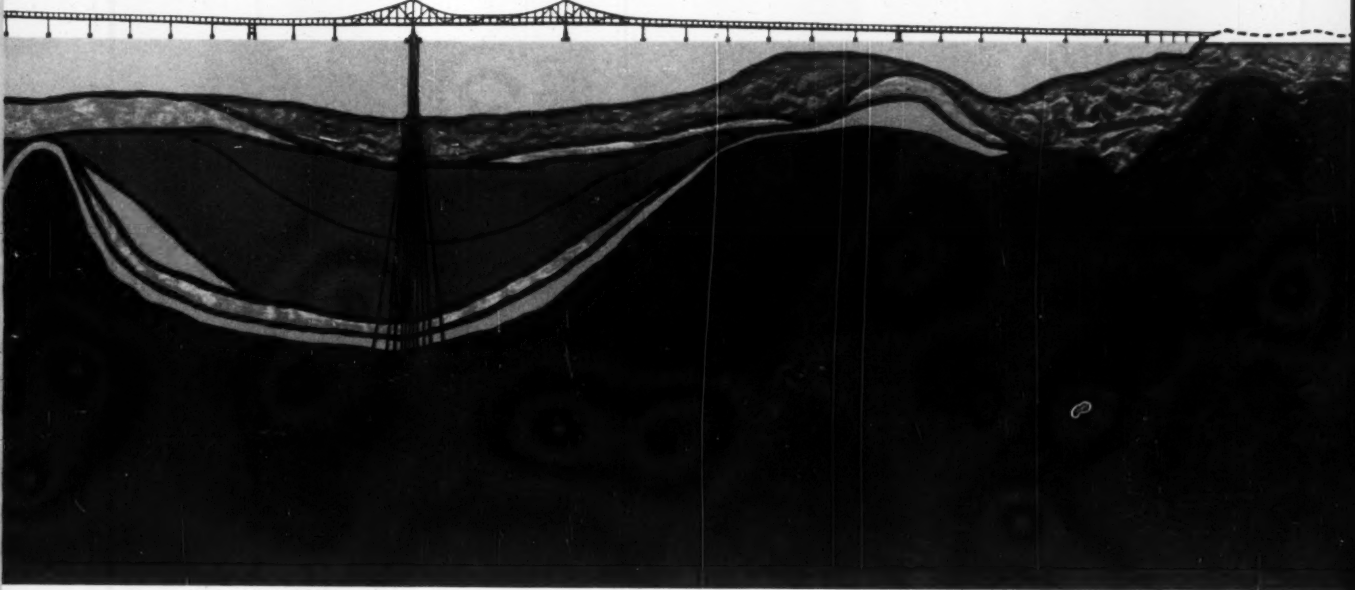
Studies indicated that steel H-piles were the logical choice because:

1. H-piles were more suitable for penetrating the deep overburden in order to reach suitable strata for end bearing.
2. H-piles provided utmost flexibility of final lengths—they could be easily cut or spliced.
3. Their ruggedness made for easy handling.
4. Their strength permitted heavy loads per pile.
5. They were readily available.

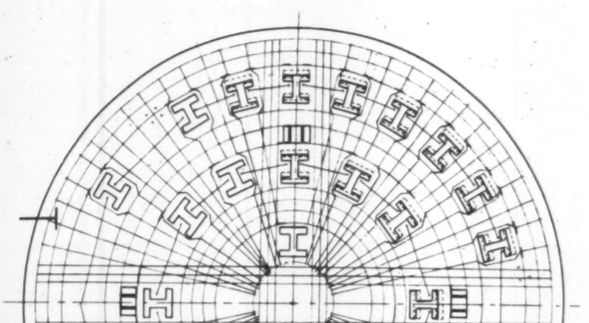
Precast bell-type piers were selected for the deep water portion of the job. These had proved economical for pile-supported piers in moderately deep water on previous major bridge jobs. At each bell-pier location, several steel H-piles were driven to position a precast concrete base grid which was later incorporated in the pier foundation. The base grid contained slots designed to act as guides for the remaining 14-inch, 89-pound steel H-piles. These were later grouted into the base grid which then served as the base for the precast bell sections set on top. After pouring a tremie seal inside the bells, the rest of the concrete was placed in the dry. These base grids were 12 to 56 feet below water so that the contractor had to provide for underwater driving of piles. This was done with rigs especially designed for the job to provide telescoping leads to support the hammer as deep as 56 feet under water and the pile head as much as 110 feet above the water.

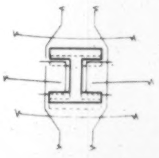
There were 62 bell-type piers constructed. In addition, 8 cofferdam-type piers and 9 dry-land piers also utilized steel H-piles. The 79 piers are supported by 5,047 14-inch, 89-pound steel H-piles ranging in length from 30 to 175 feet—a total of 585,700 lineal feet, or about 25,000 tons, approximately half of which were supplied by United States Steel.

For information on any type of steel piling—steel H-piles, sheet piling or steel pipe piling, write to any of our district offices or United States Steel, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

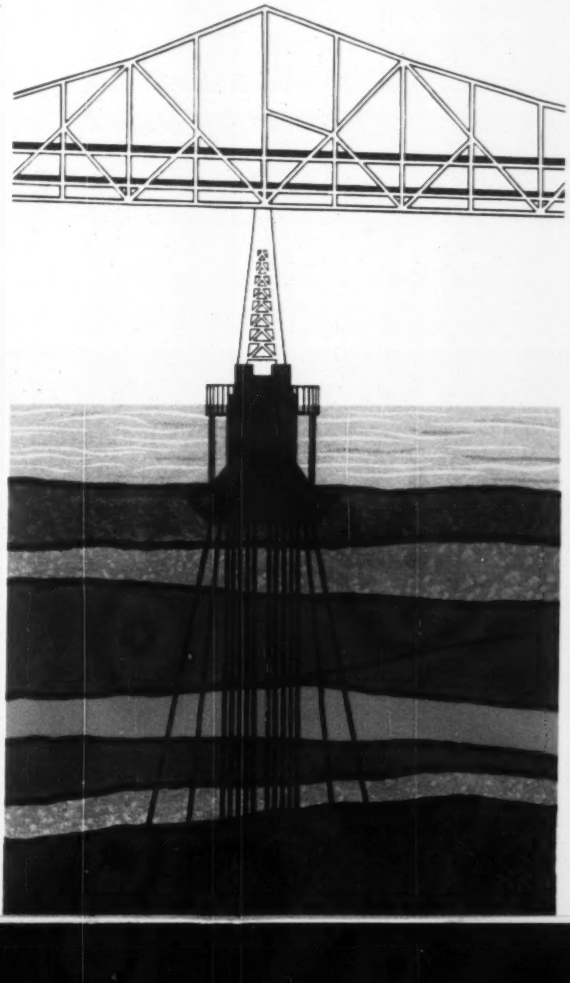


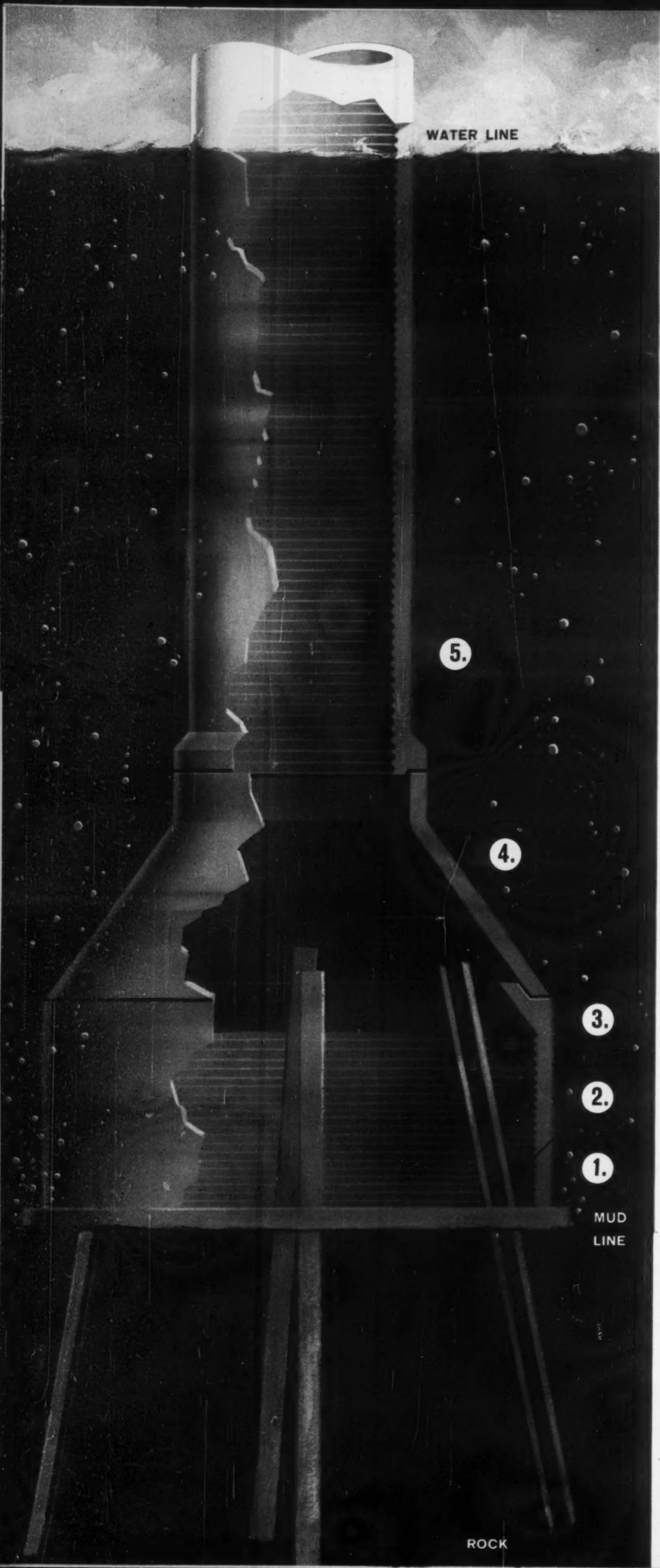
San Rafael Bridge across these holes... bell-type piers





Base grid for bell-type pier showing slots for locating piling. Batter piles indicated by dotted lines and shown in detail on small drawing.





how the bell-type piers were constructed underwater

1. At each pier location, concrete base grids containing slots to guide the steel H-piles were lowered through the water to exact position. Some were as deep as 56 feet.

2. Several steel H-piles were driven to hold each base grid in exact position. The remaining piles were then driven and the base grids were later incorporated in the pier foundation. Where necessary, pile tops were cut off underwater by divers.

3. Cylindrical precast bell sections were lowered through the water and positioned on top of each base grid. A special seal made the joints watertight.

4. Cone-shaped precast concrete or steel sections with a seal on top and bottom were then placed on top of the cylindrical sections.

5. Precast shaft extending above water. After pouring a tremie concrete seal inside the bells, the rest of the concrete was placed in the dry.

For the main piers using four interconnected bells and for some of the two-bell piers, special steel forms were used instead of precast concrete bells.

USS is a registered trademark

United States Steel Corporation – Pittsburgh
Columbia-Geneva Steel – San Francisco
National Tube–Pittsburgh
Tennessee Coal & Iron – Fairfield, Alabama
United States Steel Export Company
United States Steel

because it's strong
because it's durable

Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
October 15 Rhode Island   October 20 New Hampshire

▲ **Mass., Boston**—ELECTRIC CONVERSION—BA 11/15—City, Hospital Dpt., 818 Harrison Ave., Boston, electric conversion DC to AC, Boston City Hospital. $1,000,000. Plans deposit $25. Jackson & Moreland Inc., Park Sq. Bldg., engrs. CD 9/28.

BUILDINGS—BA

▲ **Conn., New Milford**—SCHOOL—BA 10/18—Town, Town Hall, 1 and 2 story, 88,000 sq. ft. Sunny Valley High School, west of Route 7, $1,871,200. William W. Sunderland, 81 West St., Danbury, archt. John H. Cassidy, 3142 Fairfield Ave., Bridgeport, engr. CD 11/12.

BUILDINGS—SLC

▲ **Mass., Cambridge**—MOTOR HOTEL—Hotel Corporation of America, 400 Commonwealth Ave., Boston, soon lets contract Charterhouse motor hotel, Memorial Dr. $1,000,000. Curtis & Davis, 2475 Canal St., New Orleans, La., archts. Isidor Richmond & Carney, Goldberg, 17 Arlington St., Boston, assoc. archts. CD 9/30/59.

BUILDINGS—LB & CA

Rocheford Constr. Co., P. O. Box 369, Framingham, Mass., CA **$992,006**, Hemenway ELEMENTARY SCHOOL, Water St., FRAMINGHAM, MASS. Town Framingham, Supt. Schools, 49 Lexington St., Framingham, Mass. CD 9/13.

▲ **Koch & Kehoe, Inc.**, 8101 Woodmont Ave., Bethesda, Md., CA Approx. **$1,000,000**, RESIDENTIAL HOUSING, King Ave. and Kingman St. area, WEYMOUTH, MASS. Thomas Mooreland, 4080 Howard Ave., Kensington, Md. CD 10/4.

▲ **Goldcrest Estates, Inc.**, Parkview Drive, Avon, Conn., Owner Builds, **$2,623,500**, 150 HOUSES, "Country Village", Parkview Drive, AVON, CONN.

MORGANTI, INC., Danbury Rd., Ridgefield, Conn., CD **$970,725**, North End ELEMENTARY SCHOOL, Bennett's Farm Rd, RIDGEFIELD, CONN. Town, School Bldg. Comn., Town Hall, Ridgefield, Conn., Bids Aug. 17, awarded Sept. 27, CD 9/1.

Vuono-Lione Constr. Co., 217 Bedford St., Stamford, Conn., LB **$950,000**, (3 bidders), 2 story, 100,000 sq. ft. brick MFG. PLANT, Route 7, WILTON, CONN. Perkin-Elmer Corp., Main Ave., Norwalk, Conn. CD 9/20.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
October 18 Maryland

BUILDINGS—LB & CA

▲ **V. B. Constr. Co., Inc.**, 157 Sunnyfield St., Scarsdale, N. Y., LB **$1,005,950**, (11 bidders), two 3 story 44x225 ft. DORMITORIES and KITCHEN and DINING HALL addns., BROOKVILLE, N. Y. Long Island University, C. W. Post College, Northern Blvd., Brookville, N. Y. Bids Sept. 29. CD 9/22.

D. Fortunato, Inc., 11 Garfield Ave., Floral Park, N. Y., LB **$820,000**, (6 bidders), general contract, 3 story, bsmnt., 40,000 sq. ft. ADMINISTRATION BLDG. and parking area, HEMPSTEAD, N. Y. Hofstra College, 1000 Fulton Ave., Hempstead, N. Y. Bids Sept. 28. CD 9/14.

Freeport Iron Works, 65 Columbus Ave., Freeport, N. Y., LB Total est. **$820,000**, (10 bidders), STRUCTURAL STEEL for 3 story, bsmnt. 40,000 sq. ft. Administration Bldg. and parking area, HEMPSTEAD, N. Y. Hofstra College, 1000 Fulton Ave., Hempstead, N. Y. Bids Sept. 20. CD 9/14.

John H. Dair Bldg. Constr. Co., 60 Hillside Ave., Manhasset, N. Y., LB **$981,000**, (6 bidders), general contract Herricks HIGH SCHOOL addn., NEW HYDE PARK, N. Y. Bd. Educ. Union Free School Dist. No. 9, Town of North Hempstead, N. Y. Bids Sept. 20. CD 8/23.

▲ **Holler Bros.**, Roosevelt Ave., Tonawanda, N. Y., CA **$1,998,129** general contract HIGH SCHOOL, NORTH TONAWANDA, N. Y. Bd. Educ., 236 Goundry St., North Tonawanda, N. Y. Bids Sept. 22. CD 9/29, under LB.

▲ **Bridgewater Builders**, 31 West Main St., Somerville, N. J., Owner Builds, **$1,000,000**, 45 HOUSES, off Brown Rd., Bridgewater Twp., BOUND BROOK, N. J. W. W. Jones, 327 E. 18 St., Brooklyn, N. Y., archt.

▲ **Bryan Constr. Co.**, 171 River Rd., North Arlington, N. J., CA **$1,400,000**, SCIENCE BLDG. on Campus CA Approx. **$1,250,000**, 4 story HOME OF STUDIES on Seaton Dr. Campus, CONVENT STATION, N. J. Sisters of Charity of St. Elizabeth College, Convent Station, N. J. Ferrenz & Taylor, 1451 Broadway, New York, N. Y., archts. CD 3/26/59.

▲† **U. S. Eng.**, 111 E. 16 St., New York 3, N. Y., rejected bids Aug. 30, 200 unit Capehart HOUSING No. 2, ENG-30-075-61-1, FORT DIX, N. J. LB **$2,810,999**. Will re-advertise CD 9/1, under LB.

P & D Builders, Inc., Toms River, N. J., Separate Contracts, **$918,000**, 68 unit RESIDENTIAL DEVELOPMENT, TOMS RIVER, N. J.

▲ **Bell Crest Homes**, 206 Horner St., Toms River, N. J., Separate Contracts, **$1,500,000**, 50 unit RESIDENTIAL DEVELOPMENT, TOMS RIVER, N. J.

▲ **Sunset Brook Estates**, Old Somerset Rd., Watchung, N. J., Owner Builds, **$1,000,000**, 65 HOUSES, off Hunter Rd., WACHUNG, N. J.

▲ **Raymond Tublitz**, 75 South Orange Ave., South Orange, N. J., Owner Builds, **$1,750,000**, 75 HOUSES, off Preakness Ave., WAYNE, N. J.

▲ **Engineers, Inc.**, 487 Orange St., Newark, N. J., CA **$1,000,000**, design and construct 175,000 sq. ft. PLANT addn., Troy Hills Rd., WHIPPANY, N. J. Rowe Manufacturing Co., Troy Hills Rd., Whippany, N. J.

▲ **Fort Washington Industrial Park Constr. Co.**, Fort Washington, Pa., CA **$1,500,000**, PHARMACEUTICAL PLANT, OFFICE, RESEARCH FACILITIES, FORT WASHINGTON, PA. William H. Rorer, Inc., 4865 Stenton Ave., Phila., Pa. CD 5/27.

▲ **Frank H. Wilson Co.**, 125 Coulter Ave., Ardmore, Pa., LB **$3,992,800**, general contract JUNIOR-SENIOR HIGH SCHOOL, Bustleton Pike and Veree Rd., PHILA., PA. Bd. Educ., 21st and Parkway, Phila., Pa. CD 9/1.

▲ **Pickard & Co.**, Newtown Square, Pa., Separate Contracts, **$2,000,000**, RESIDENTIAL DEVELOPMENT (130) Sugartown Rd., etc., WILLISTOWN, PA.

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
October 21 Alabama   October 25 North Carolina
STREETS AND ROADS
October 21, November 8 Alabama
October 25 North Carolina

▲ **S. C., Greenwood**—BA 10/19—Greenwood Metropolitan Sewer Comn. and City, City Hall, sanitary sewer lines and pumping station, $1,000,000. Plans deposit $30. Black & Veatch, 4706 Broadway, Kansas City, Mo., engrs. CD 9/9, under LB.

BUILDINGS—BA

▲ **N. C., Albemarle**—PLANT—BA 10/18—Wiscassett Mills Co., Albemarle, 4 story dye plant, $1,000,000. Plans deposit $26. J. N. Pease & Co., 2925 N. Independence Blvd., Charlotte, archts. CD 8/31.

HEAVY CONSTRUCTION—LB & CA

▲ **Ruscon Constr. Co.**, P. O. Box 837, Charleston, S. C., CA **$1,128,495**, union pier and transit shed and warehouse, CHARLESTON, S. C. S. C. State Port Auth., foot of Market St., Charleston, S. C. (**Correction—**contractors.) CD 9/13, under CA.

▲ **FLORIDA**—State Rd. Dpt., Tallahassee, Bids opened 9/30,

Fla.—**Hardaway Contg. Co.**, Box 477, Port Tampa City, Fla., LB **$1,401,640** (6 bidders), constructing Bridge Structures "A", "B" and "C", of 690 ft., 666 ft. and 2,552 ft. lengths respectively, Structures "A" and "B" are of conc. slab deck and prestressed conc. beam spans on prestressed conc. pile bents; Structure "C" is composed of an electrically-operated double-leaf bascule span, two steel I-beam flanking spans and prestressed conc. beam approach spans, on conc. pile bents; conc. handrail; guardrail; timber fender systems; navigation lights; electrically-operated safety gates; conc. sheet pile bulkheads; approx. 3,908 lin. ft. State Proj., Job No. 15200-3501, Pinellas Bay-Way System, Pinellas Co.;

Fla.—**Cone Bros. Contr. Co.**, Box 1259, Tampa 1, Fla., LB **$1,195,103** (6 bidders), bridge, approaches between Clearwater and Clearwater Beach, constructing 1,024 ft. four-lane bridge having sixteen spans of conc. slab deck and prestressed beams and two flanking spans of conc. deck and steel I-beams, all on prestressed composite conc. and welded steel rail pile bents, and an electrically-operated double-leaf bascule span on conc. piers founded on welded steel rail piling; conc. sheet pile bulkhead; treated timber fender system; navigation lights; conc. and aluminum pipe handrail; grading, limerock base with type 1 asph. conc. surf. course, binder and surf. treat. (total thickness 3 in.), roadway lighting, approx. 0.596 mi. State Proj. No. 15220-3502, SR 60, Pinellas Co. CD 9/22;

Fla.—**L. & A. Contracting Co.**, Box 1651, Hattiesburg, Miss., LB **$941,895** (9 bidders), three single roadway bridges, approx. 760 ft. conc. deck and prestressed beams on conc. piers founded on prestressed conc. piling; four dual roadway bridges approx. 1,093.5 ft. and 222 ft. single roadway bridge of conc. deck and prestressed conc. beams on prestressed conc. pile bents; and 340 ft. dual roadway bridge of conc. deck and prestressed conc. beams on steel pile bents; aluminum handrail, approx. 0.271 mi. Federal Aid Interstate Proj. No. I-75-3(11)181 (Jobs Nos. 37130-3403 and 32100-3414) SR 93, between the relief bridge south of the Suwannee River and SR 6, Suwannee and Hamilton Counties. CD 9/16.

▲ **FLORIDA**—State Road Dpt., Room 228, Holland Bldg., Tallahassee, Bids opened 9/30,

Fla.—**Troup Bros., Inc.**, Box 33188, Miami 33, Fla., LB **$723,278** (7 bidders), grading, four-lane limerock base; Type 1 b. conc. surf. with binder course, Type 1-B surf. treat. (total thickness 3 in.) storm sewers; approx. 2.597 mi. State Proj. Job. No. 87281-3501, SR 828 (LeJeune Road), Coral Gables from SR 5 (US) north to SR 90 (US 41), Dade Co.;

Fla.—**The Arundel Corp.**, Box 931, Miami 6, Fla., LB **$946,611**, (6 bidders), approx. 2,000,000 cu. yd. hydraulic embankment; approx. 3,300 lin. ft. conc. sheet pile roadway bulkhead, etc., approx. 10,406 mi. State Proj., Job Nos. 15200-3502, 15200-3503 and 15200-3504, Pinellas Bayway System, Pinellas Co. CD 9/22.

▲ **Steel City Constr. Co.**, P.O. Box 5965, Birmingham, Ala., CA **$1,043,000**, water treatment plant, PRICHARD, ALA. City, City Hall, Prichard, Ala. CD 9/12.

▲ **KENTUCKY**—Commonwealth of Kentucky, Dpt. Hys., Frankfort,

Ky.—**Ralph Myers Contr. Corp.**, Box 230, Salem, Ind., CA **$1,074,981**, b. conc. 2.803 mi. Covington-Tennessee State Line. I 75-6 (3) 133 F 174(12), Scott Co.;

Ky.—**Codell Constr. Co.**, Codell Bldg., Winchester, Ky., CA **$2,160,148**, c. conc. 6.856 mi. Burnside-Whitley City. F 110(8), Pulaski Co. Bids Sept. 23, awarded Sept. 28. CD 9/28, under LB.

BUILDINGS—LB & CA

▲ **John Crosland Co.**, 122 E. 3rd St., Charlotte, N. C. Owner Builds, **$1,200,000**, 80 RESIDENCES, CHARLOTTE, N. C.

▲ **Helms Constr. Co.**, 305 Smith College St., Charlotte, N. C., Owner Builds **$1,500,000**, 100 RESIDENCES, Mint Hill Rd. area, CHARLOTTE, N. C.

▲ **Crescent Timber Corp.**, Boxwood Dr., Guilford College, N. C. Separate Contracts, **$1,800,000**, 92 RESIDENCES, GUILFORD COLLEGE, N. C.

▲ **T. A. Loving & Co.**, Wachovia Bank Bldg., Goldsboro, N. C., LB **$1,477,450**, Tobacco re-drying PLANT, WILSON, N. C. Imperial Tobacco Co., Ltd., of Great Britain, 422 E. Franklin St., Richmond, Va. Bids Sept. 28. CD 9/13.

▲ **Batson-Cook Co.**, P. O. Box 151, West Point, Ga., CA Est. **$1,000,000**, SHOPPING CENTER ADDN., DECATUR, GA. Belvedere Plaza, Inc., 3812 Candler Plaza, Decatur, Ga.

▲ **Pearce & Gresham**, 202½ Second Ave. S. E., Box 1527, Decatur, Ala., CA **$1,250,000**, HIGH SCHOOL, CULLMAN, ALA. City, City Hall, Cullman, Ala. Awarded Sept. 21. Bids May 12 rejected. CD 4/25.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
October 25 Ohio
STREETS AND ROADS
October 19 Michigan   October 25 Ohio
November 1 Indiana

▲ **Ind., Evansville**—BA 10/24—City Water Works Dpt., City Hall, Plan Set A, Contract I, water transmission mains, Plans deposit $30; Plan Set B, Contracts II, III, IV, V, VI, VII, VIII, pumping equipment and seven pumping stations, Plans deposit $20; Plan Set C, Contract IX, X, XI, clearwell addns., filter plant, standpipe foundations, standpipe, Plans deposit $15. CD 5/13.

BUILDINGS—BA

▲ **O., Ashland**—HIGH SCHOOL—BA 11/3—Bd. Educ., high school, $2,750,000. Fulton DelaMotte, Larson & Nassau, 6014 Euclid Ave., Cleveland, Zone 3, archts. CD 11/9.

HEAVY CONSTRUCTION—LB & CA

▲ **OHIO**—State Hy. Dpt., State Depts. Bldg., Columbus, Zone 15, Bids opened 9/27,

O.—**Harry Miller Excavating Co., Inc.**, and **Earl H. Newell & Sons**, 116 Woodland Ave., Columbiana, O. LB **$743,744**, est. $859,000, (8 bidders), Type T-35, structures 4.149 mi., State Rte. 43-(16.19) (20.45) S-227(2), Proj. 692, Carroll Co.;

O.—**Silvestri Bros.**, 713 Andrews Ave., Youngstown, O. LB **$1,298,913**, est. $1,483,800, (5 bidders), Type T 71, structures 1.032 mi. State Rte. 7-14.80, I-680-9 (3) 223 (City of Youngstown) Proj. 694, Mahoning Co. CD 9/12.

▲ **Halpin, Inc.**, 2650 Christie St., Toledo, O. CA **$1,027,499**, Sanitary Sewer Proj. 49, Proj. H, TOLEDO, O. Bd. Comrs. Lucas Co., Toledo, O. Bids Sept. 22. CD 10/3, under LB.

▲ **INDIANA**—State Hy. Dpt., State House Annex, Indianapolis, Bids opened 9/29,

Ind.—**McMahan Constr. Co.**, Rochester, Ind., LB **$162,677**, est. $191,396, (7 bidders), bit. base, wid'n., resurf. Contract No. S 5097, Crawford, Illinois and Sullivan Counties; LB **$735,767**, est. $775,507, (6 bidders), c. conc. Proj. R 5116, Howard and Tipton Counties.

Ind.—**Fischer Constr. Co.**, 10147 Springfield St., Cincinnati, O., LB **$1,316,658**, est. $1,571,994, 14 bidders), c. conc. Proj. R-5117, Bartholomew Co.;

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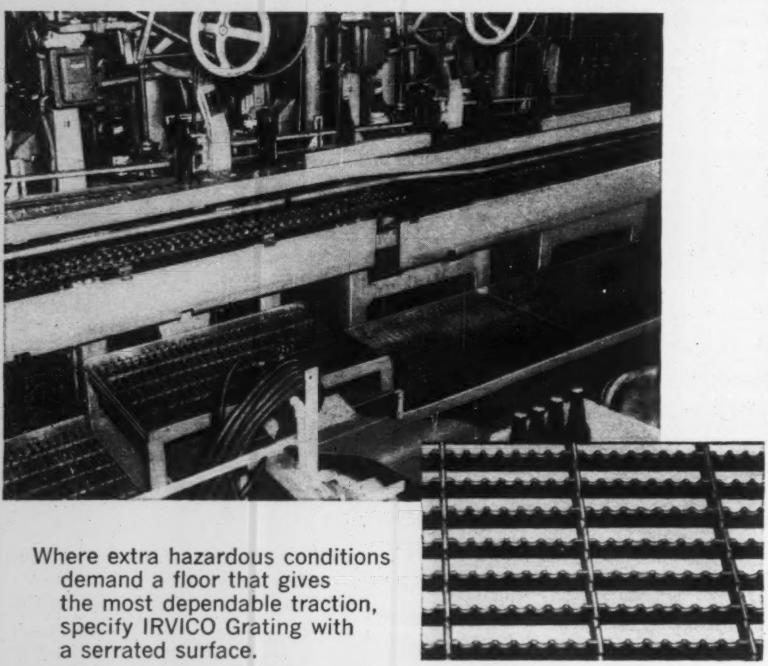

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Ind.—**The Hunt Paving Co.**, 3421 Kelly St., Indianapolis, Ind., LB **$1,482,452**, est. $1,694,946, (3 bidders), c. conc. paving slab structure, Proj. R-5118, Marion Co.,

Ind.—**Spears-Dehner, Inc.**, 1212 Clark St., Fort Wayne, Ind., LB **$1,956,868**, est. $2,323,383, (10 bidders), c. conc. pavement Proj. 5119, Allen and Whitley Counties. CD 9/9.

▲ **INDIANA**—State Hy. Dpt., State House Annex., Indianapolis, Bids opened 9/29,

Ind.—**R. L. Schutt Co., Inc.**, 611 N. Park Ave., Indianapolis, Ind., LB **$519,821**, est. $600,000 ,(9 bidders), 5-span cont. steel beam bridge, approach grading, rein.-con. pavements, 0.584 mi. County Rd. over Fall Creek, Emerson Ave., east of Indianapolis, southwest of E. 56th St., Proj. US 467(1), Marion 9168, Contract 5053, Marion Co.;

Ind.—**Maxon Constr. Co.**, 2600 Far Hills St., Dayton 19, O. LB **$1,715,073**, est. $1,948,584, (13 bidders), 18 span cont. steel plate girder, cont. steel beam and rein.-con. girder bridge, approach grading, rein.-con. pavement 0.056 mi. proposed US 50 over Wabash River, north of Vincennes, Proj. U 889(2) 50-A9-4625, Contract 5106, Knox Co. CD 9/9.

▲ **ILLINOIS**—Dpt. P. Wks. & Bldgs., Div. Hys., Centennial Bldgs., Springfield,

Ill.—**Hoeffken Bros.**, 222 W. B St., Belleville, Ill. and **Fred A. Weber**, 929 Alabama St., St. Louis, Mo. CA **$2,746,805** paving, FAI 70 and FA 4 near Fairmount and National City, St. Clair Co.;

Ill.—**Robert A. Black, Inc.**, 13912 S. Halsted St., Chicago, Ill., CA **$1,285,120**, base course 1.98 mi. SBI 50, Cicero Ave., Cook Co.;

Ill.—**S. J. Groves & Sons**, 1104 E. Reynolds St., Springfield, Ill., CA **$1,866,207**, paving, resurf. FAI 70 and Ill. 111 near East St. Louis, St. Clair and Madison Counties. Grand total $5,788,132. Bids Sept. 13, awarded Sept. 29. CD 9/16, under LB.

BUILDINGS—LB & CA

▲ **Bruscino Development Co.**, 23202 Lorain Rd., North Olmstead, O. Owner Builds, **$17,000,000**, development, 1,000 HOMES on 450 acres fronting of westside at Jaycox Rd., east side at Lear Nagle Rd., 2 mi. south of Detroit Rd., incl. streets sewers, water lines AVON, O. Harland Bartholomew & Assocs., Louderman Bldg. 317 N. 11th St., St. Louis 1, Mo., engrs.

▲ **Bruscino Development Co.**, 23202 Lorain Rd. North Olmstead, O., Owner Builds, **$30,000,000**, INDUSTRIAL PARK, 280 acres from Jaycox Rd. west to Schneider Rd. for 35 to 40 light industrial plants, AVON, O. Harland, Bartholomew & Assocs., Lauderman Bldg., 317 N. 11th St., St. Louis 1, Mo., engrs.

▲ **Stuart-Glenn Development Co.**, 1651 Lee Rd., Cleveland 18, O., Own Forces, **$1,500,000**, 48 addnl. HOMES, Manchester Farms Estates, Chester Twp., CHESTERLAND, O. Fred W. Cahn, 1209 W. Miner Rd., Cleveland 24, O., archts.

▲ **Hudson Constr. Co.**, 38 Handel Lane, Cincinnati, O., Owner Builds, **$3,125,000**, 143 one floor, bsmnt., brick, and 2 story, bsmnt., brick HOMES off Daly Rd., CINCINNATI, O. J. S. Wald Assocs., 882 N. Bend Rd., Cincinnati, O., engrs.

▲ **Jones & Laughlin Steel Corp.**, 3 Gateway Center, Pitts-Pittsburgh, Pa., CA Total est. **$10,000,000**, two basic oxygen furnaces for OXYGEN PLANT, Jennings Rd., CLEVELAND, O. Air Products, Inc., Trexeler Town, Allentown, Pa.

▲ **Paugh & Brown**, 6007 Euclid Ave., Cleveland 3, O. CA **$1,517,855**, general contract, Churchill-Orville JUNIOR HIGH SCHOOL, CLEVELAND, O. Bd. Educ., 1380 E. 6th St., Cleveland O., Bids Sept. 23, Awarded Sept. 28, CD 10/3, under LB.

▲ **Jennings & Churella**, New London, O., CA Est. **$1,000,000**, 130,000 sq. ft. PLANT expansion, MANSFIELD, O. Ingersoll Humphreys Div., Borg Warner Corp., 201 E. 5th St., Mansfield, O. CD 1/21.

▲ **A. M. Norman & Sons**, Marion, Ill., CA **$1,509,000**, Proj. ILL 57-1, 100 unit DWELLINGS, one MANAGEMENT MAINTENANCE-COMMUNITY BLDG., Centralia, Proj. ILL 57-2, 50 unit DWELLING, one MANAGEMENT-MAINTENANCE-COMMUNITY BLDG., Salem, SALEM, ILL. Marion Co. Housing Auth., Court House, Salem, Ill. Bids Aug. 31. CD 9/22. under LB.

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

October 18 Iowa — October 19 Wyoming
October 27 Missouri — October 28 North Dakota
October 28 Oklahoma

STREETS AND ROADS

October 18 Iowa, Texas — October 19 Colorado, Texas
October 19 Wyoming — October 20, 25 Kansas
October 27 Missouri — October 28 North Dakota
October 28 Oklahoma

Minn., Granite Falls—BA 10/18—Yellow Medicine Co., Judicial Ditch No. 21, involving 8 treated timber bridges, open ditch excav. and level spoil banks, Section 1 to 5 (inclusive), CM pipe arches on all sections, tile lines, Sections 1 to 4, etc. $910,000.

▲ **Minn., St. Paul**—GRAIN ELEVATOR, etc.—BA 10/18—City Port Authority of St. Paul, 60 E. 4 St., grain elevator and barge terminal dock walls, Warner Rd. and Childs Rd. $1,250,000. G. L. Levin, 2395 University Ave., engr.

▲† **Texas-Louisiana**—BA About 11/3—U. S. Eng., Box 1600, Fort Worth, Tex., dredging 7,586,000 cu. yd., Sabine-Neches Waterway, Sabine-Neches Canal, realignment of Sabine River Channel and Orange Turning

Basin, Orange and Jefferson Counties, Texas, and Cameron and Calcasieu Parishes, Louisiana, $1,500,000.

BUILDINGS—BA

▲ **Tex., Laredo**—MOTOR HOTEL—Bids Asked—Pan-Tex Hotel Corp., P. O. Box 1525, 108 room La Posado Motor Hotel, $1,000,000. Wallace B. Thomas, 7007 San Pedro, San Antonio, archt. CD 4/28.

HEAVY CONSTRUCTION—LB & CA

MINNESOTA—State Hy. Dpt., Capitol Approach, St. Paul,

E. W. Coons Co. & R. Maturi Corp., Box 239, Hibbings, Minn., CA **$977,048** grading, gravel base and plant mixed bit. surf. 2.7 mi., Proj. 6934-38. St. Louis Co. Bids Aug. 19, awarded Sept. 13. CD 8/23, under LB.

▲ **KANSAS**—State Hy. Comn., Hutchinson,

Kan.—**Inland Constr. Co., Inc.**, Box 1933, Wichita 2, Kan., CA **$125,522**, (4 bidders), grading, conc. pavt. 0.307 mi. SP 225-87 U 043-1(12), Sedgwick Co.; CA **$119,157**, (4 bidders), grading, b. conc. 0.572 mi., Sp 53-96 F 024-1(2) Pts. I&II, Sumner Co.;

Kan.—**Ralph W. Forkner Constr. Co.**, Inc., Box 131, Clay Center, Kan., CA **$173,818**, (5 bidders), grading 10.497 mi. SP 96-78 F .044-1(2), Reno Co.;

Kan.—**Stannard Constr. Co., Inc.**, 519 South Broadway, Wichita 2, Kan., CA **$918,159**, (5 bidders), Concrete pavt. 4.107 mi. SP 235-87 I 235-1(45)53, Sedgwick Co. Grand total $1,336,656. Bids Sept. 15, CD 9/1.

▲ **TEXAS**—State Hy. Comn., Austin,

Tex.—**San Jacinto Equipment Co.**, P. O. Box 162, Bellaire, Tex., CA **$3,698,809**, grading, st. sew. cmt. stab. rein.-con. pvt. and A.C. pvt., 3.555 mi. Hy. I 610, Proj. U 535(10), I 610-7(76), Harris Co, CD 9/28, under LB;

Tex.—**Cage Bros.**, 6959 San Pedro, San Antonio, Tex., CA **$2,863,888**, grading, strs., 4.722 mi. Hy. IH 820, Proj. I 820-4(29), Tarrant Co., Bids Sept. 21, CD 9/26, under LB.

Humble Pipeline Co., 1216 Main St., Houston, Tex., CA **$750,000**, earthwork, waterflooding, unitization to recover oil, Cardona Lake field, CRANE, TEX. Humble Oil & Refining Co., and others, 1216 Main St., Houston, Tex.

BUILDINGS—LB & CA

▲ **Kraus-Anderson, Inc.**, 501 Eighth St., Minneapolis, Minn., CA **$10,000,000**, 1 story, 442 x 575 ft. Brookdale SHOPPING CENTER, Hys. 100 and 152, BROOKLYN CENTER, MINN. Dayton's, 701 Nicollet Ave., Minneapolis, Minn. Bids Sept. 20. CD 8/16.

▲ **D. L. Witcher, Inc.**, 400 2nd Ave. S., Minneapolis, Minn., LB **$1,067,500** (13 bidders), JUNIOR-SENIOR HIGH SCHOOL, ST. ANTHONY, MINN. Bd. Educ. Independent School Dist. No. 283 St. Anthony, Minn. Bids Sept. 28. CD 9/15.

▲ **Barken-Stifelman, Inc.**, c/o 7717 Clayton Rd., Clayton 17, Mo., Owner Builds, Total cost **$1,000,000**, Two Year Program, First Year $500,000, 87 RESIDENCES, Craig Hills Subdivision adjacent to 1300 Craig Rd., CREVE COEUR (ST. LOUIS 41, P. O.), MO.

▲ **Contemporary Homes, Inc.**, 9220 Lackland Rd., Overland 14, Mo., Owner Builds Total cost **$9,390,000** Ten year Program, First Year $1,000,000, 1960-61, 385 addnl. brick, frame RESIDENCES, Robinwood West Subdivision, CREVE COEUR (ST. LOUIS 41, P. O.), MO.

▲ **Frank E. Zykan Realty Co.**, 9402 St. Charles Rock Rd., Overland 14, Mo., Owner Builds, Total cost **$1,500,000**, Two Year Program, First Year $750,000, 144 addnl. split level brick and frame RESIDENCES, Midland Valley Subdivision, OVERLAND (ST. LOUIS 14, P. O.), MO.

▲ **Sunray-Midcontinent Oil Co.**, 907 S. Detroit St., Tulsa, Okla., Separate Contracts, **$1,000,000**, HYDRO-DEALKYLATION UNIT, to mfg. benzene, West Tulsa Refinery, TULSA, OKLA. CD 8/1.

▲ **Geo. A. Fuller Co.**, 940 Gibraltar Life Bldg., Dallas, Tex., LB **$5,538,500**, (24 bidders), 10 story, 412,000 sq. ft. rein.-con. br. acous. ceilings, ceramic, terrazo and asp. tilesp. system, air-conditioned HOSPITAL, DALLAS, TEX. Saint Paul's Hospital, Hines Blvd. and Inwood Rd., Dallas, Tex. (**Correction**—status). CD 10/5, under CA;
Natkin & Co., 2676 Brenner, Dallas, Tex., LB **$2,671,540**, mech. for hospital (Dallas, Tex.);
Harman Elec. Constr. Co., 4311 Belmont, Dallas, Tex., LB **$870,133**, elec. work for hospital (Dallas, Tex.).

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES
October 25 Washington

STREETS AND ROADS

October 25 Washington November 2, 3, 10, 16 California

▲ **Calif., Los Angeles**—BA 10/26—City, City Hall, Westwood Relief Sewer, Unit 1. $1,500,000. CD 4/8/55.

▲ **Alaska, Anchorage**—BA 11/7—City, City Hall, water treatment plant with filtration capacity of 8 m.g.d. in steel frame bldg. $1,400,000. Plans deposit $100. Alenar, Associated, Anchorage, and Stevens & Thompson, Box 508, Portland, Ore., engrs. CD 2/10.

BUILDINGS—BA

▲ **Utah, Ogden**—PHYSICAL EDUCATIONAL—BA 10/25—Utah State Bldg. Bd., 419 State Capitol, Salt Lake City, physical education, Weber College. $1,250,000. Plans deposit $100. Grix, Plowgian & Gessell, 3930 Riverdale Rd., archts. CD 7/18/58.

▲ **Wash., Kalama**—GRAIN ELEVATOR etc.—BA 11/1—Port of Kalama, 3,500,000 bu. grain elevator, 750 ft. shipping dock and barge, truck and rail unloading facilities. Plans deposit $100. Marshall, Barr & Assocs., Lloyd Bldg., Seattle, Zone 1, engrs. CD 6/10.

▲ **Calif., Bakersfield**—AUDITORIUM—BA 11/14—City, City Hall, municipal auditorium. $3,750,000. CD 11/10/58.

HEAVY CONSTRUCTION—LB & CA

▲ **OREGON**—State Hy. Comn., Highway Bldg., Salem, Bids opened 9/27,

Ore.—**Peter Kiewit Sons Co.**, 405 E. Main St., Medford, Ore., CA **$1,222,159** (7 bidders), grading, oiling 3.2 mi. Oregon Coast Hy., Proj. FAP F 124(2), Curry Co.;

Ore.—**Roy L. Houck Sons Corp.**, 1585 N. 20th St., Salem, Ore., CA **$671,071** (8 bidders), grading, structures 5.51 mi. Pacific Hy., Proj. FAIHP I 5-3(18) 175, Lane Co.;

Ore.—**J. J. Konen Constr. Co.**, Lewiston, Idaho, CA **$221,100** (5 bidders), grading, oiling 6.37 mi. Little Sheep Creek Hy., Proj. FAP S-238(6), Wallowa Co.;

Ore.—**Earl L. McNutt Co.**, 35½ E. Broadway, Eugene, Ore., CA **$234,178** (14 bidders), grading, oiling 9.16 mi. Frenchglen Hy., Harney Co.;

Ore.—**Salem Road & Driveway Co.**, Salem-Dalles Rd., Salem, Ore., CA **$201,505** (2 bidders), grading, paving, structures 1.23 mi. Pacific Hy., Proj. F 162(3), Polk Co. Grand total $2,550,013. CD 9/14.

▲† **Scheumann & Johnson**, 700 North 36 St., Seattle, Wash., CA **$4,126,456**, constr. Spring Creek Power Plant near Redding, Shasta Co., Spec. DC 5381, CALIFORNIA. Bureau Reclamation, Dpt. Interior, Lewiston, Calif. Bids Sept. 15. CD 9/19, under LB.

▲ **CALIFORNIA**—State Div. Hys., 1120 N St., Sacramento,

Peter Kiewit Sons Co., 442 Post St., San Francisco, Calif., CA **$4,696,579**, grading, paving 3.8 mi. four lane freeway, Contra Costa approach to Benicia-Martinez Bridge, Contra Costa Co. Bids Sept. 21. CD 9/26, under LB.

BUILDINGS—LB & CA

▲ **Carroll Co., Inc.**, 3443 S.E. 31st Ave., Portland, Ore., CA **$5,000,000**, 13 story APARTMENT, SEASIDE, ORE. Seaside Scenic Residences, Inc., Avenue O, and Beach Dr., Seaside, Ore. Dougan & Heims, Royal Bldg., Portland, Ore., archts.

▲ **Vance Beaird**, 5112 West Washington Blvd., Los Angeles, Calif., LB **$1,046,000**, (13 bidders), Proj. 1, Crescent JUNIOR HIGH SCHOOL, ANAHEIM, CALIF. Anaheim Union High School Dist., 123 North Citron Ave., Anaheim, Calif. Bids Sept. 30. CD 9/7.

▲† **J. W. Bateson Constr. Co.**, P.O. Box 13307, Dallas 20, Tex., LB **$7,550,000** (5 bidders), 500 unit Capehart HOUSING, Naval Ordnance Test Station, China Lake, Spec. 30226, INYOKERN, CALIF. Dist. P. Wks. Office, 11th Naval Dist., 1220 Pacific Hy., San Diego 1, Calif. Bids Oct. 4. CD 9/19.

▲ **Pozzo Constr. Co.**, 970 N. Virgil Ave., Los Angeles, Calif., CA Est. **$4,000,000**, HOSPITAL addn., 509 E. 10th St., LONG BEACH, CALIF. Sisters of Charity of the Incarnate Word, 509 E. 10th St., Long Beach, Calif.

▲ **Calbro, Inc.**, 6855 E. Rosecrans, Paramount, Calif., Owner Builds, **$1,846,600**, 141 DWELLINGS, Amber Valley Dr., Lone Ridge Pl., Golden Lanter Lane, Elmrock, Edgeworth, Clearglen, Breezewood, Groveside Aves., Whitespring and Groveland Drs., NORWALK, CALIF.

▲ **Drogin Constr. Co.**, 6610 El Cajon Blvd., San Diego 15, Calif., CA Est. **$1,635,700**, 101 RESIDENCES and GARAGES, Pacific No. 1, SAN DIEGO, CALIF. Pacifica Builders, 6610 El Cajon Blvd., San Diego 15, Calif. Palmer & Krisel, 3602 Midway Dr., San Diego 10, Calif., archts.

▲ **Garahue Land Co.**, 16901 S. Western Ave., Gardena, Calif., Owner Builds, **$1,066,000**, 87 DWELLINGS, Fries Ave., E. 244, 245 and 246 Sts., Tract 24605, WILMINGTON, CALIF.

AMERICANS ABROAD

BUILDINGS—LB & CA

▲ **E. I. duPont de Nemours & Co.**, du Pont Bldg., Wilmington, Del., U. S. A., Own Forces, Delrin acetal resin PLANT, DORDRECHT, NETHERLANDS.

FOREIGN

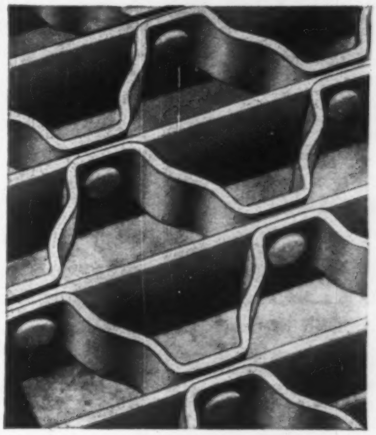
HEAVY CONSTRUCTION—LB & CA

▲ **A. Monk & Co., Ltd.**, 75 Victoria St., S. W. 1, London, England, CA Est. **$3,500,000**, 2,430 ft. rein.-con, piled and decked quay (Part of $13,300,000 development scheme in progress) King George Dock, Hull, ENGLAND. British Transport Comn., London, England.

▲ **ENGLAND**—Ministry of Transport, London,

Dowsett Engineering Constr., Gateshead, Durham, England, CA Est. **$1,900,000**, road by-passing Aberford Village on A 1 (Great North Rd.) running between London and Newcastle-upon-Tyne 2½ mi., West Riding, Yorkshire.

New "CK" BRIDGE DECKING ENDS WEAVING OF CARS



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4 years, has the
same advantages
of safety,
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self-maintenance
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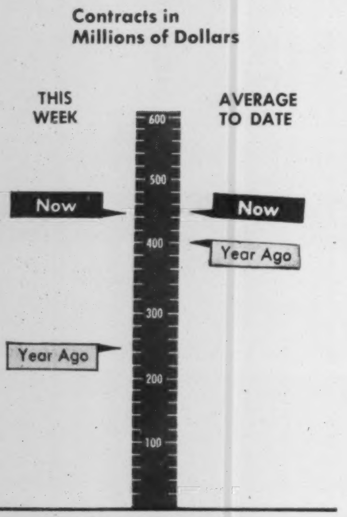
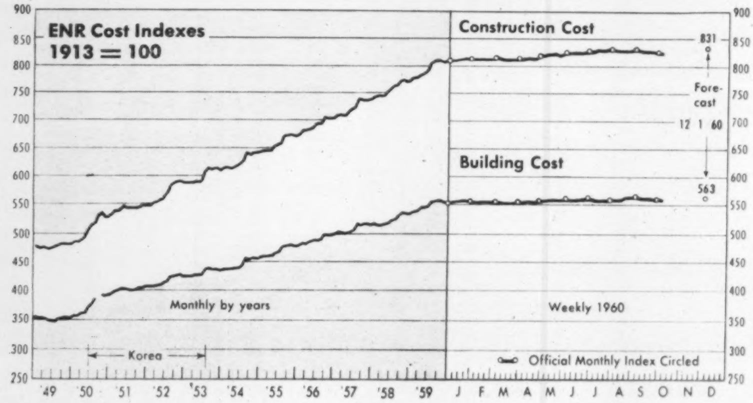
Construction Scoreboard

This Week . . .





ENR INDEXES (1913=100), 20-cities' average	Week of Oct. 6 1960	% Change from Sept. 8 1960	Oct. 8 1959
Construction Cost	829.47	−0.12	+2.30
Building Cost	561.34	−0.15	+1.16

* Official Monthly Index for October, 1960.

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.

AMOUNT OF CONTRACTS LET

Contracts Awarded In 50 States By Type	This Week (millions)	Cum. 41 wks 1960 (millions)	Chge '59-'60 %
All Heavy Construction	$444.5	$18,505.5	+12
By Ownership			
PRIVATE	252.3	10,020.1	+21
PUBLIC	192.2	8,485.6	+ 3
State & Municipal	171.5	6,602.8	+12
Federal	20.7	1,882.8	−21
By Type of Work			
PUBLIC			
Waterworks	8.1	377.3	+17
Sewerage	13.7	464.5	−11
Bridges*	14.0	661.0	+41
Highways	91.4	2,714.8	+13
Earthwork, Dam & Waterways	14.9	627.5	−14
Buildings:			
Excl. Housing	34.0	1,930.1	− 9
Housing	3.8	537.6	+ 1
Unclassified	12.2	1,175.5	+ 3
PRIVATE			
Buildings:			
Mass Housing	115.8	4,878.6	+32
Commercial	51.3	1,968.3	+12
Industrial	72.6	2,229.8	− 7
Unclassified	12.7	940.5	+123

*Includes Private bridges

NOTE: Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

NEW CONSTRUCTION CAPITAL

	Week of Oct. 6 (millions)	Cum. 40 wks (millions)	Chge '59-60 %
Corporate Securities	$275.7	$2,639.2	− 7
State and Municipal:			
All Except Housing	134.9	5,156.2	+11
Housing	....	189.3	+152
Federal Loans	1.4	158.9	+41
Federal Aid	....	2,717.8	−13
Total Nonfederal	$412.0	$10,861.4	+ 1
Federal Appropriations:			
Projects in U. S.	....	$2,556.1	−28
Outside U. S.	....	157.8	+3486
Total New Capital	$412.0	$13,575.3	− 5

Latest Month . . .

CONTRACTS AWARDED

	1960 Sept. (millions)	1960 9-Mos. (millions)	Percent Change from 1959 Sept.(†)	Percent Change from 1959 9-Mos.
Total U. S. (50 States)	$2,232.4	$17,458.2	+15	+10
Private	1,159.0	9,340.2	− 4	+17
Public	1,073.4	8,118.0	+46	+ 3
State and Municipal	889.5	6,280.5	+53	+12
Federal	183.9	1,837.6	+22	−19
ENR Volume Index, 1913 = 100	603	606	+11	+ 7

NEW CONSTRUCTION CAPITAL

Total U. S.	2,216.5	13,163.2	−54	− 7
State and Municipal Bond Sales	1,238.9	5,210.5	+236	+12
Corporate Security Sales	41.5	2,363.5	−78	−14
Federal Loans, Aid (nonfederal work)	407.1	2,875.3	+23	−11
Federal Appropriations, (federal work)	529.0	2,713.9	−87	−24

* Includes funds for outside U. S.

† Based on average week: 5 weeks in Sept. 1960 and 4 weeks in Sept. 1959.

MATERIALS SHIPMENTS

		1960 July (Jl) Aug. (Ag)	1960 Cum. (No. of Mos.)	Percent Change from Year Ago Mo.	Percent Change from Year Ago Cum.
Portland Cement, Bur Mines	thous bbls	36,387(Ag)	204,655(8)	− 1	− 9
Concrete Paving Awards, PCA	thous sq yd	11,216(Ag)	72,488(8)	+61	+ 3
Fabricated Structural Steel	thous tons	332(Ag)	2,264(8)	+51	+ 7
Bookings, AISC	thous tons	262(Ag)	2,268(8)	+33	+10
Reinforcing Bars, Net, AISI	thous tons	223(Ag)	1,444(8)	‡	‡
Lumber, NLMA	mil fbm	3,037(Ag)	24,182(8)	− 3	− 1
Orders	mil fbm	2,959(Ag)	22,904(8)	− 2	− 6
Production	mil fbm	3,175(Ag)	24,008(8)	+0.1	−0.2
Clay Products, Bureau of Census					
Brick, Unglazed, Common, Face	mil bri	588.3(Jl)	3,704.1(7)	−18	−11
Vitrified Clay Sewer Pipe	thous tons	179.8(Jl)	1,051.9(7)	− 8	− 6
Structural Tile, Unglazed	thous tons	45.3(Jl)	295.6(7)	−11	− 7
Asphalt Products, Bureau of Census					
Asphalt Roofing	thous sales sqs	6,001.6(Jl)	30,967.3(7)	− 2	− 7
Asphalt Siding	thous sales sqs	78.2(Jl)	431.1(7)	− 9	−13
Aluminum, Wrought, Net, Bur Census					
Sheet and Plate (non-heat treatable)	mil lbs	109.6(Jl)	739.5(7)	−24	− 8
Wire and Cable	mil lbs	24.8(Jl)	172.9(7)	−38	−11
Extruded Shapes (soft alloys)	mil lbs	63.4(Jl)	474.9(7)	−36	−11

‡ Figures not available for Aug. 59, due to strike.

EMPLOYMENT AND FAILURES

Contract Const Employment, BLS	thous	3,184(Ag)	2,727(8)**	+ 2	+ 1
Contractor Failures, Dun & Bradstreet					
Number		217(Ag)	1,685(8)	+20	+24
Liabilities	thous	$27,874(Ag)	$124,288(8)	+131	+56

** Average per month

Tanks as big as a barge can carry

These new tanks have unobstructed interiors to carry maximum cargo with least danger of contamination—the essential requirements of an order for two independent tank barges from Union Carbide Chemicals Company. One barge is designed to carry Grade A and lower liquids having a Reid Vapor Pressure not exceeding 25 psi. The other barge will carry similar cargoes having a Reid Vapor Pressure not exceeding 40 psi.

American Bridge designed and constructed the tanks and barges at its modern Plate Shop in Orange, Texas. The results: two Jumbo Hopper Barges 195′ x 35′ containing six tanks 52′ long x 14′-6″ O.D. and weighing 22 tons with a total capacity of 383,000 gals. per barge. The reinforcing members for the tanks were placed on the tank exteriors leaving unobstructed nickel-plated interiors.

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USS

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It's Your

Seal

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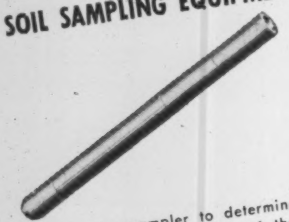
FOR
SOIL SAMPLING EQUIPMENT



Do you need a sampler to determine only the general classification of the sub-surface soils or to secure samples for testing in a soils laboratory?

Sprague & Henwood has just the sampler that you need.

Illustrated above is the S&H Split Barrel Sampler, a general all-purpose sampling device. The Thin Wall "Shelby Tube" Samplers, the Improved Stationary Piston Samplers, and the Greer-McClelland Hydraulic Piston Sampler are but a few of the many samplers in the Sprague & Henwood Line.

Send for Soil Sampling Bulletin 300.

SOIL SAMPLING RIGS

Compact, lightweight units especially suited for soil sampling and pipe driving work. Units are illustrated and described in Bulletin 300.

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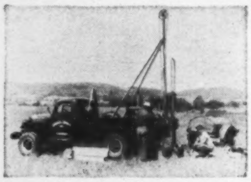

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Sprague & Henwood uses modern drilling equipment . . . experienced drilling crews . . . with expert supervision assuring you of the best soil samples and rock cores possible under existing conditions.

Another of Sprague & Henwood's contract services is pressure grouting. Either cement or chemical grout can be injected into the faults and voids depending upon the conditions encountered in the underlying strata.

Branches are strategically located to give you fast efficient service. Send for the new vest-pocket booklet on Sprague & Henwood's contract services.

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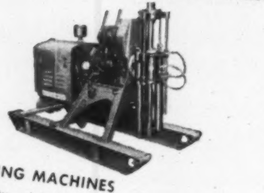

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Quality engineered and field tested drilling machines are available in various sizes and types to meet varied drilling conditions.

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Chicago Builders Fight for Jobs

- **Competition in the Windy City brings bargains for owners as contractors pare bids down to the bone.**
- **Many low bids are separated from the fifth low by only 2%. On one job, runner-up was just $2 off.**

Chicago's building contractors are fighting each other with some of the sharpest bidding pencils put to estimating sheets in recent years. As a result, general building costs have risen only 0.9% above one year ago, according to ENR's 20-Cities Building Cost Index.

"Never before has competition been so severe," says Leonard J. Graf, president of the Builders' Association of Chicago. He predicts that the competition will "probably keep building costs relatively stable for several months to come, regardless of higher wages and costlier materials." (For evidence that Chicago is not alone in feeling stiff competition, see p. 25.)

During the first seven months of this year, about $361 million worth of building contracts were awarded in the six-county Chicago area. Of this, $278 million was in Cook County, which includes Chicago. During all of last year, building contracts totaled $473 million in the six counties, with $389 million going to Cook County.

Building contractors can cite dozens of examples of close bidding, but one they consider a classic was on a job awarded last year—a $1-million contract for work at Argonne National Laboratory, near Chicago. The difference between the two lowest bids: $2.

On other large building projects awarded this year, there has been an average difference of but 2% between the low bidder and the fourth or fifth low bidders.

That kind of competition is giving owners some bargains in buildings, Mr. Graf says. It also tends to squeeze out the shoe-string operators and those who must cut quality and workmanship to make a profit on low bids.

Architects and engineers are helping contractors breathe in their tight competitive vests by providing designs that are simple and relatively easy to accomplish in steel and concrete. Materials producers are also helping by developing new products and improving conventional ones.

Although costs have been steady, they are stabilized at a relatively high point. As of September, Chicago ranked fourth in building costs, according to ENR's 20-Cities Building Cost Index (ENR Sept. 22, p. 245).

The upward push on costs may bring at least one benefit to the industry: greater use of apprentices. Chicago builders have one of the best apprenticeship systems in the country. The big problem, however, is to get more building contractors to take them on.

Contractors must give trainees in some crafts five days' pay for four days' work; the apprentices' fifth day is spent at the city's trade school. In other crafts, apprentices attend training sessions at night.

Many large contractors hesitate to invest too much time and money to train a large number of apprentices because the turnover is extremely high among them once they've become qualified journeymen. They leave Chicago projects to take jobs in outlying areas where wage scales are slightly higher.

The severe competition has led some contractors to favor the negotiated contract over the competitive bidding system, although the Chicago association is a member of AGC, which advocates the competitive system.

Supporters of the negotiated agreement say it gives the owner and architect the opportunity of putting a price tag on each of the various alternates possible in the design. "The owner knows exactly what he is getting for his money," says one contractor.

Although there is some difference of opinion on the issue of negotiated vs. competitive bid contracts, most contractors remain firmly in favor of the single general contract, whether negotiated or bid. They say a project progresses more rapidly and smoothly under the supervision of one general contractor. Breaking up the coordination between contractor, architect and owner by the use of separate contracts for various mechanical phases frequently complicates labor relations, the contractors say.

Chicago has an outstanding reputation for avoiding labor trouble. Relatively few jurisdictional disputes have arisen during the last several years. Credit for the favorable labor relations is given to the excellent working arrangement between representatives of the 19 building trades, the Building Construction Employers Association and the Chicago Builders' group.

Competition also has helped to align many members of the Chicago Builders' organization against the "package type builder." The members argue that any sizable project can be built less expensively under either a negotiated contract or competitive contract than by turning to a package builder, who also provides his own architectural and engineering designs.

Architects are not too happy over the tight construction competition. They say that general contractors who always accept the lowest subcontract bid may in the process, also accept the least qualified subcontractor.

One contractor points out that if the owner and architect don't like the subcontractor who has put in the lowest bid, they can obtain the one they want by paying the difference between his price and that of the lowest bidder.

Court Validates Use Tax On Construction Materials

Michigan's Supreme Court has ruled that the state has the power to levy a use tax on construction materials brought in from outside Michigan.

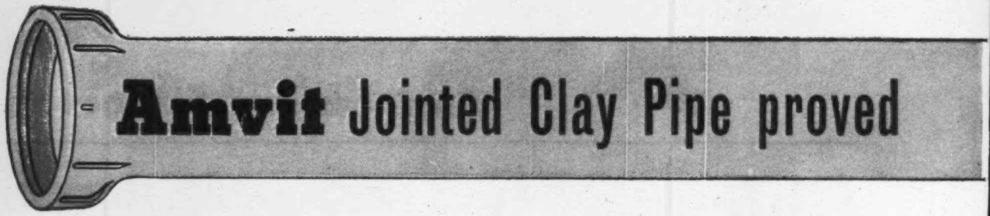
Revenue officials said failure to validate the levy would have exempted the construction industry from both sales and use taxes, thus depriving the state of millions of dollars in revenue annually.

The unanimous decision resulted in forcing Romeo Homes and Fenton & Fenton of Macombe County, to pay $3,134 and $4,371 respectively in use taxes on building materials shipped into Michigan from Toledo.

The companies argued that the materials became a permanent part of real estate and therefore came under the exemption granted real estate in the use and sales tax law.

The court said, "An exemption may not be allowed unless the legislative intent to grant it clearly appears." It said the legislature apparently had no such intention.

Assistant Attorney General William D. Dexter said several similar cases pending will be affected by the ruling.


Amvit Jointed Clay Pipe proved

NOW, A NEW
TO SERVE THE

The Factory-made Plastic Mechanical Joint for quick, low-cost installation

Never before has a product gained immediate and wide acceptance and usage in such a short period of time. In the past few years over 100,000 miles of Amvit Jointed Clay Pipe have been installed across the country with outstanding results.

The Amvit Joint is manufactured from plasticized resins of polyvinyl chloride. No other combination of materials is used or needed. It is applied on the pipe at the factory by a special manufacturing process and is delivered to the job site ready for immediate installation. No special tools or equipment are needed and the line can be installed in adverse weather.

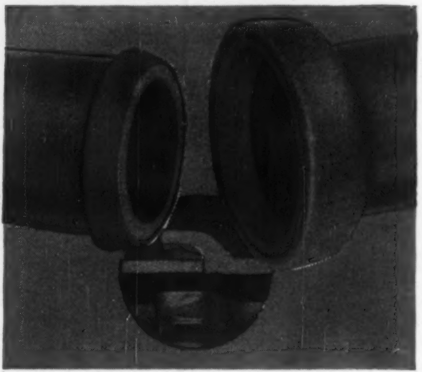
The design of the Amvit Joint is based on the ball and socket principle. The material on the spigot end is a convex shape, with the bell end in a concave shape. This permits easy and rapid installation.

When the joint is made, it reaches maximum compression which results in a really tight line, thus preventing infiltration, exfiltration and root penetration. A large savings in both pumping and treatment plant costs can be achieved.

The design of the Amvit Joint assures self-centering which gives a smoother invert and better flow characteristics. This, in turn, results in a trouble-free line with less maintenance and repair.

Due to the tightness of the joint, no foreign matter such as sand, stones or dirt can enter the line. This permits a larger capacity in the pipe for transmittal of sewage alone. Since infiltration is practically eliminated, the sanitary sewer does not have to carry anything other than that for which it was designed. This feature permits the use of smaller sized pipe in many instances and will reduce the material cost.

For more information on how Amvit can help cut your sewer project costs, write or call American Vitrified Products Company, at our office nearest you.



FOOLPROOF JOINT—Amvit Joint is a true mechanical joint made from plasticized resins of polyvinyl chloride. It is a compression type joint on the ball and socket principle. When the joint is made, the surfaces of both bell and spigot rings are in constant high compression.

PLANTS ACROSS THE NATION

Let Amvit's many strategically located plants and regional offices serve as your clay products supply depots.

There's a plant near you to serve you.

Brazil, Indiana
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East Liverpool, Ohio
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Milwaukee, Wisconsin
South Bend, Indiana
St. Louis, Missouri
Whitehall, Illinois
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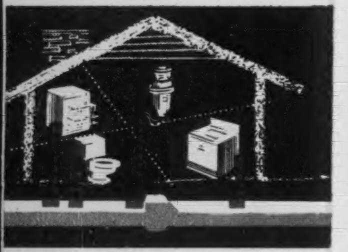
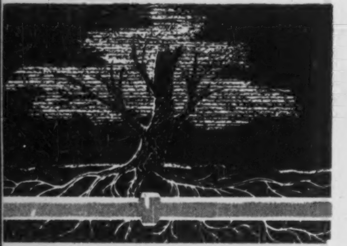
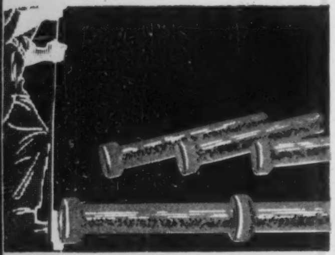
SMOOTHER—Due to the self-centering feature of the Amvit joint and the super-smooth interior surface of the pipe, a lower Kutters "n" value can be used in design.



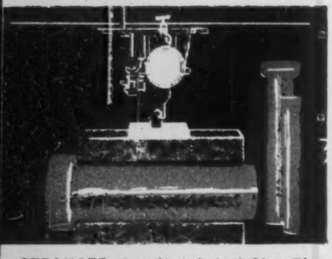
ACID RESISTANT—The interior surface of Amvit Jointed Clay Pipe cannot be harmed by sewage, chemicals, or hot liquids. No competitive materials can make this statement.



ROOTPROOF—Amvit is a compression type joint on the ball and socket principle. When the joint is made nothing can enter the line.



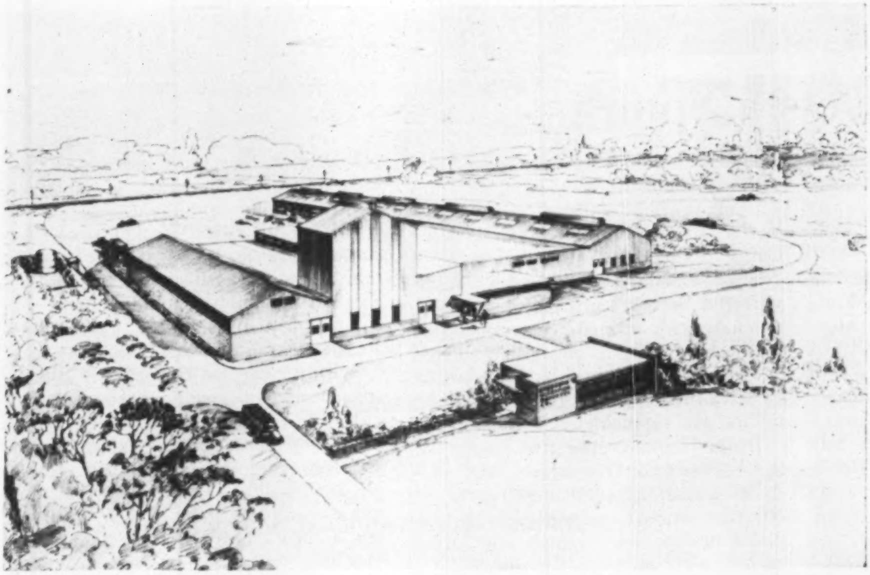
SPEEDS INSTALLATION—Delivered to the job site ready for immediate installation, Amvit is a true mechanical joint. It is pliable, permitting reasonable deflection.



STRONGER—Amvit Jointed Clay Pipe far exceeds A.S.T.M. specifications because it is produced by the most modern manufacturing techniques with rigid quality controls.

in service across the nation!

JERSEY PLANT EAST COAST



THE MOST ADVANCED CLAY PIPE PLANT IN THE NATION

With a capacity of more than 350,000 feet of clay pipe a month, this new plant will serve the needs of Amvit Jointed Clay Pipe on the East Coast and New England areas. The most advanced production techniques in the industry are producing never-before-equaled quality of clay pipe and factory-made joints.

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AMERICAN VITRIFIED PRODUCTS COMPANY

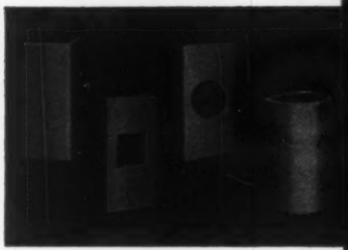
NATIONAL CITY BANK BUILDING, Cleveland, Ohio

Since 1848

AMERICAN

GLAS-GLAZ PIPE—Here's a new product that has everything. Vitrified clay pipe in long five-foot lengths, the rootproof Amvit Joint, glass lined inside and out.

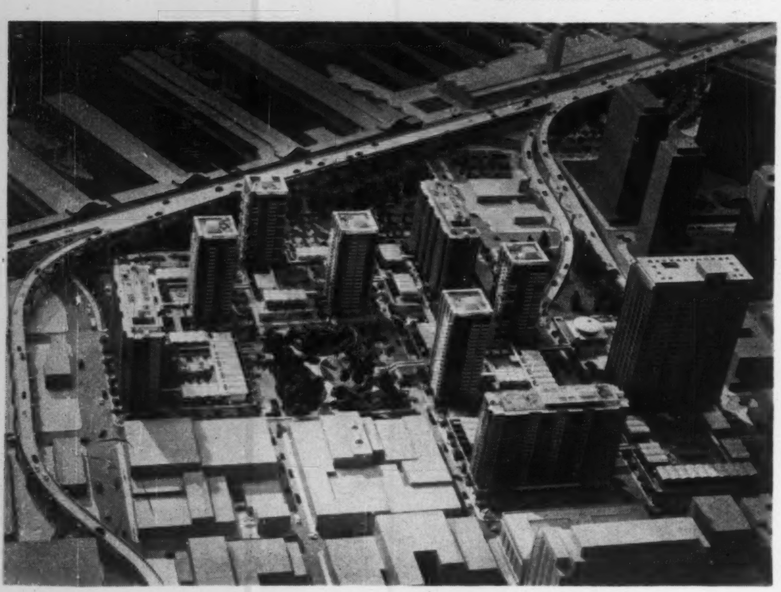
FITTINGS—More than 35 different fittings are available with or without the Amvit Joint. There are fittings to solve every problem.



FLUE LININGS—America's flue linings conform to A.S.T.M. specifications and are available in all sizes and dimensions.

WALL COPING—American produces four styles of wall coping to suit any architectural needs. Easily installed, the coping virtually becomes part of the structure.

LINER PLATES—Curved liner plates will protect concrete structures from corrosion. They are used on pipe 36" to 144" diameter. Flat liner plates are used in box culverts, abutments and wherever abrasive action is encountered.



Renewal Job Gets a Sponsor

San Francisco's Redevelopment Agency last week selected a subsidiary of Perini Corp., Framingham, Mass., to develop 19.7 acres in the 44-acre Golden Gateway redevelopment site.

The developing subsidiary, Perini Land & Development Co. of New York City, is allied on the project with Morrison-Knudsen Co., Inc., Boise, Idaho; Hilp & Rhodes, San Francisco, and several private investment firms in the city.

The project, which the Perini syndicate estimates will cost $60 million, will consist of 16.3 acres of residential area and 3.4 acres of office and garage area. The office tower will rise 25 stories from the garage.

The residential development will contain 2,174 living units in three 22-story towers and five buildings of lesser height.

The winning group will pay the city $8.6 million for the property, an increase of $2 million over its original bid of last March, when nine teams of developers submitted their bids and proposals for this first in the three-phase development scheme. The second and third phases will add commercial and park facilities.

It is not known when construction will be started. The Redevelopment Agency has taken over only 20 parcels required for the project. Another 50 must be acquired through condemnation, but all these are being contested in the courts by the private owners. After construction does start, it's estimated that about 3½ years will be required for completion.

Others bidding against Perini were Tishman-Cahill Renewal Associates and a joint venture made up of Del E. Webb Construction Co. and Kern County Land Co. The Tishman-Cahill group offered $6 million for fee title, or attractive lease-rental arrangements or purchase with ultimate reversion rights to the city. The Webb group offered $6 million plus premium payments in 10 or 20 years after occupancy or $2 million as a supplementary payment.

Justin Herman, executive director of the agency, said the agency felt that these two offers, while high, were not attractive enough to outweigh the superior design, lower rentals and earlier marketability of the Perini proposal.

In addition to raising its bid price, the Perini syndicate agreed to add more architects to assure greater variety among structures, invest $1 million in community facilities to be maintained at the developer's expense and provide exterior works of art such as fountains, statuary and murals, the value of all to be approximately equal to 1% of the cost of the buildings' construction.

Engineers are H. H. Brunnier, structural; De Leuw Cather & Co., mechanical, electrical and traffic; Dames & Moore, soil mechanics; and Walter W. Soroka, acoustical.

Designs were made by architects Wurster, Bernardi and Emmons of San Francisco, in association with Demars and Reay of Berkeley, Calif. Consultants were Pietro Belluschi and Milton Schwartz. Sasaki, Walter and Associates, Inc., were the landscape architects.

Better Market

Orders for equipment increase in July

Orders for new construction equipment improved in August. The McGraw-Hill Economics Department index rose about 2% to 256, based on average monthly dollar volume in 1949 as 100. Moreover, the value of the July new-orders index was revised upward from the original value of 245 to 252.

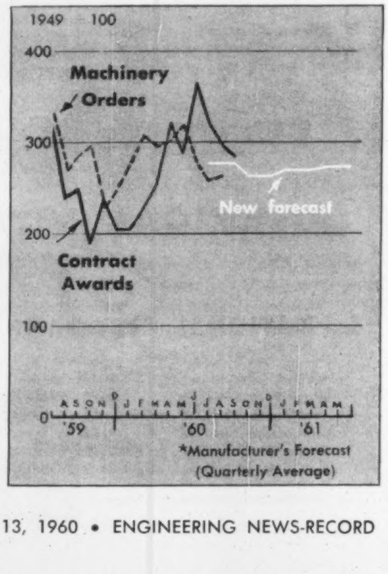
Although last month's orders upturn was not surprising in view of the boom in heavy construction contractors' new business, machinery orders were below a year ago for the sixth consecutive month.

Less discouraging news for equipment makers, however, was that August's year-to-year decline was only 5%, which is much less than each of the declines in June and July.

For the first eight months, the new orders index is off 8% from last year. The index reflects total order volume of companies cooperating in the McGraw-Hill survey. Each of the companies is predominantly a producer of construction or mining equipment.

The comparative weakness of the construction machinery market in relation to the strength of contract awards also is a left-handed compliment to the equipment manufacturers. Contractors are discovering that the equipment they bought a year or two ago is highly efficient and extremely rugged.

ENR's Construction Contract Award Index for September edged down to 285 from August's value of 296, based on 1949=100. Despite this dip, the index was 16% above a year ago and set a new record for a September month.



*Manufacturer's Forecast (Quarterly Average)

IF YOUR CRAWLERS HAVE "CLASH BOXES" BETTER CHECK THE ADVANTAGES OF THE

"EUC" C-6

Without full-power shift even a "brand new" tractor is an obsolete machine in performance and work-ability when compared with the new Euclid C-6 crawler. For the fast response and all-around versatility that's needed in mines, quarries, construction and industrial work, no other tractor has all the advantages you get in the C-6.

Proven Torqmatic Drive provides full-power shift and instant reverse without delay for clutching and shifting . . . with a flick of the wrist you change direction or from one speed range to another. It's the same easy-to-operate power train that has proved its dependable service in thousands of other earthmovers.

Get the facts on how the C-6 can cut costs on your jobs . . . from dozing and ripping to push-loading big scrapers. You'll find the many operating advantages of this modern tractor will bring you a better return on your investment.

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DOZING and RIPPING . . . plenty of power, easy operation and good stability make the C-6 tops for work in rough going and heavy material.

GM GENERAL MOTORS

EUCLID

EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE

Business in Brief . . .

• **Southern seaway**—The Harrison County Development Commission at Gulfport, Miss., has asked the county government to sell $5.5 million worth of bonds to finance a seaway job near the city. The issue was approved by voters last summer. Bedell & Nelson, New Orleans consulting engineers, are working on the first phases of the project.

• **Port expansion**—The New Orleans Dock Board has approved outlays totaling $33.5 million through 1963 for improvement and expansion of the city's port.

• **The end's in sight**—Philadelphia's Water Department is only two years away from completing its $336-million water and sanitation improvement program started in 1957.

• **Toll bridge plans**—A $148,000 contract for engineering and feasibility studies for a second bridge across the Delaware River was given to Howard, Needles, Tammen and Bergendorf, New York City engineering firm. Delaware Memorial Bridge Commission authorized the study.

• **New water agency, new money**—First step in the formation of a municipal water department for Santa Fe Springs, Calif., was taken last week when the City Council authorized a $6.1-million bond referendum for October 25.

• **School construction boost**—Alabama allocated another $50 million to its counties early this month for school construction.

Pipeline Contracts Awarded

Construction will start shortly on a 1,400-mile natural gas pipeline through the western U.S. and Canada. Contracts totaling more than $325 million were awarded last week to six individual contracting companies and joint venturers.

Close to $200 million of the total represents domestic contract volume on the project; the remainder will go for construction of the Canadian sections.

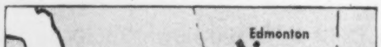
The U.S. share pushes total domestic pipeline volume this year to approximately $544 million. ENR estimates that for the full year, pipeline contract awards will total between $675 million and $700 million (ENR Apr. 21, p. 21).

Principal sponsor is Pacific Gas & Electric Co. of San Francisco.

The line will extend 910 miles in the U.S. from San Francisco to the Idaho-British Columbia border and another 495 miles from the border to the Berland River gas fields, 150 miles northwest of Edmonton, Alberta.

The project will bring some tough construction problems and conditions. It will be installed at altitudes ranging from 6,600 ft to sea level; it will snake across terrain including forested mountains, canyons, deserts, farm lands, range land and laval beds; and it will cross a score of major rivers. Temperatures encountered will vary from 115 deg in summer to −55 deg in winter.

Contracts for the U.S. sections went to H. C. Price Co., Bartlesville, Okla., and a joint venture of Western Pipeline, Inc., Austin, and J. P. Neill & Co., Inc., Dallas.



ROUTE of 1,400-mile pipeline.

Canadian contracts were awarded to Price-Poole of Canada, Ltd., Calgary and Edmonton; Majestic Constructors, Ltd., Edmonton; Dutton-Williams Bros., Ltd., Calgary, and Alberta Consolidated Pipeline Builders.

Moving Up?

One cement firm lifts price; others hold off

A Los Angeles cement company last week tossed a straw into the wind: It announced that effective next January 1 the price of portland cement will go up 25 cent a barrel at its mills.

The increase by Riverside Cement Co., Division of American Cement Corp. of Philadelphia, will bring the price to $3.68 a barrel at the Crestmore mill and $3.64 a barrel at the Oro Grande mill. It will be the first price increase since 1956.

So far, Riverside is alone in its proposed move. Two other cement companies serving the southern California area—Monolith Portland Cement Co. and California Portland Cement Co., —are holding off action.

A Monolith spokesman says a "price increase has been needed for a long time to keep pace with the increase of labor and other costs." And, he says, Monolith will raise prices after January 1, "if price hikes become nationwide."

And California Portland Cement Co. says it will not raise prices for 1961, "because it is unable at this time to foresee next year's economic conditions or any market improvement that would result in an increase in present prices."

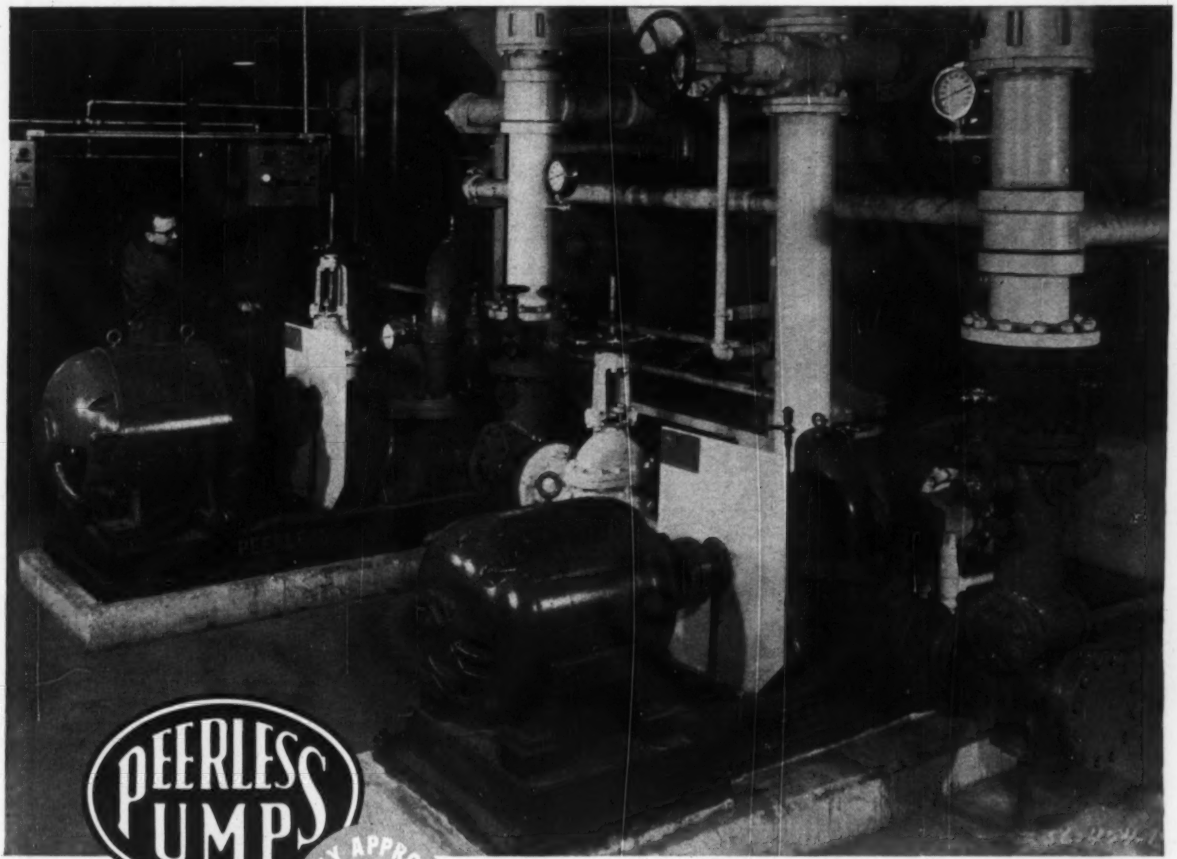
In northern California, Permanente Cement Co. of Oakland has not yet made a decision on prices for next year. The last price change in northern California came on Jan. 1, 1959, when prices were raised 15 cents a barrel to $3.55.

The move by Riverside apparently made no impression on producers serving other sections of the country. Major Northeast, Middle Atlantic and Midwest producers all said it is too early to make any decision. "We haven't even thought about it at this time," said one Pennsylvania manufacturer.

Pricing policies for an upcoming year are generally announced by cement manufacturers between late November and mid-December.

Unless construction generally nosedives next year—and ENR's contract awards trend and backlog of proposed work discounts this possibility—chances are good that cement prices will go up (ENR July 7, p. 79). Legislation approved in July tightens tax laws on deduction of percentage depletion allowances.

After January 1, cement companies will have to base depletion allowances on the value of kiln feed. This will cut earnings rather sharply, a difference that probably will have to be made up by the buyers.



Prudential Insurance Co. takes no chances on fire in its recently erected Chicago Office Building. Peerless pumps give immediate protection against fire *automatically*, without human attention.

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UNDERWRITERS' LABORATORIES INC. AND ASSOCIATED FACTORY MUTUAL FIRE INSURANCE COMPANIES

PEERLESS FULLY APPROVED
FIRE PUMPS . . .

HOW TO DEAL WITH A FIRE BEFORE IT STARTS!

To insure adequate protection against the hazards of fire, a qualified independent fire protection system is a must. And to be doubly sure of the best system, the vital heart of the unit, the pump, should be the best money can buy. That's where Peerless *fully-approved* fire pumps excell.

Throughout a third of a century, Peerless fire pumps have attained an enviable and pre-eminent reputation in protecting all types of buildings, plants and warehouses. Put this know-how to work on your protection problem. See how Peerless' combination of top quality fire pump equipment, exacting engineering application and nationwide service can serve you best. In many instances, the savings effected thru more favorable insurance premiums can pay for the installation. For fire pumps at their very best look to the leader, look to Peerless. Write for bulletin B-1500 today.

Available with steam turbine, engine or electric motor drives, Peerless fire pumps are available for high pressure sprinkler systems, or foam smothering systems in every kind of commercial, or industrial installation.

Putting Ideas to Work

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FOOD MACHINERY AND CHEMICAL CORPORATION ®

Peerless Pump
HYDRODYNAMICS DIVISION

Plants:
Los Angeles 31, Calif. and Indianapolis 8, Ind.

UNSURPASSED PROTECTION

PEERLESS CENTRIFUGAL FIRE PUMPS

Peerless Pump, Hydrodynamics Division, Food Machinery and Chemical Corporation
2005 Northwestern Ave., Indianapolis, Indiana ENR

Gentlemen: Please send me immediately a copy of your Bulletin B-1500.

NAME______________________________

COMPANY______________________________

ADDRESS______________________________

CITY________________ZONE______STATE__________

Now New York specifies basic lead silico chromate in all coats of rust-inhibitive paint system

You can be *sure* that before any state changes a basic materials specification, evidence must be substantiated indicating superior performance.

Adoption by the New York State Department of Public Works of a rust-inhibitive paint system containing basic lead silico chromate pigment in all coats, is a case in point. The initial evidence for this decision was established by more than ten years of exposure testing by National Lead at its Sayville, Long Island, Test Station.

It was found that even without a finish coat to protect them, primers containing *M50*® basic lead silico chromate pigment endured ten years. And the *M50* pigment, unlike other rust-inhibitors, could be used in intermediate and finish coats as well as in primers.

Then the state obtained its own evidence by painting several bridges with basic lead silico chromate paints. One such job was the renovation of the Albany, New York, bridge shown above. It called for both shop-coat priming of new steel and spot priming of the old. And the intermediate and finish coats were properly applied in the Fall.

Pass field test with flying colors

New York State Engineers were more than satisfied . . . not only with the performance but also with the working properties, tint retention, and color uniformity of the basic lead silico chromate paints. On November 28, 1958, the Division of Construction of the New York State Department of Public Works issued new "Paint and Painting" specifications calling for basic lead silico chromate pigment *in all coats* of the typical rust-inhibitive paint system for highway structures. Today, state after state is following suit.

For information on basic lead silico chromate paints, consult your regular paint suppliers. For technical details on National Lead's basic lead silico chromate, *M50* pigment, contact National Lead Company.

M50® *an* **oncor**® TRADEMARK *Pigment... A Development of* **National Lead Company**

General Offices: 111 Broadway, New York 6, N.Y.

Construction workers on a job contaminated with radioactivity found it . . .

Hot, but Not too Hot to Handle

Construction workers unfamiliar with radiation practices have successfully completed a California construction project that involved working for an extended period of time in an area contaminated by radioactivity.

The work was performed by General Electric Co.'s Atomic Power Equipment Department and Bechtel Corp. of San Francisco at G.E.'s Vallecitos Boiling Water Reactor near San Jose.

The principal lesson learned was that workers do not need a course in nuclear physics to do their jobs safely and effectively. But an earnest investment in time and effort to explain the special circumstances under which they work will go a long way toward maintaining morale and efficiency.

The operation is believed to have been the first experience of its kind for construction workers on a large-scale, privately financed construction project.

Purpose of the work at Vallecitos was to upgrade the specific power output of the reactor so that more advanced experiments could be carried out.

The three-month, $1-million project was, from the labor point of view, an important forerunner of future "teardowns" and "build-ups" of established reactors. Elsewhere, future projects of a similar nature may well involve additions, modifications, replacement of components, or repairs on facilities that have, through use, built up a significant level of radiation.

Disassembly of the dangerously radioactive core of the Vallecitos reactor was handled by highly trained G.E. staff engineers and technicians. But extra manpower, skills and equipment were needed to install pumps, piping and an instrumentation conduit within a strict time schedule. G. E. contracted with Bechtel for this work.

Bechtel hand-picked a supervisor, project engineer, general foreman and two crew foremen. They brought with them a crew of about 70 pipefitters, welders and instrument installation men. The work force was considered above-average in skills and morale. Some of the staff men and several of the workers had taken part in the facility's original construction.

Although hazard pay was not given, labor costs still ran at least one and half times normal, ENR was told. Work was set up on the basis of a single shift, 10-hour day. This gave each man two double-time hours a day. Travel allowances were liberal because of the plant's remote location.

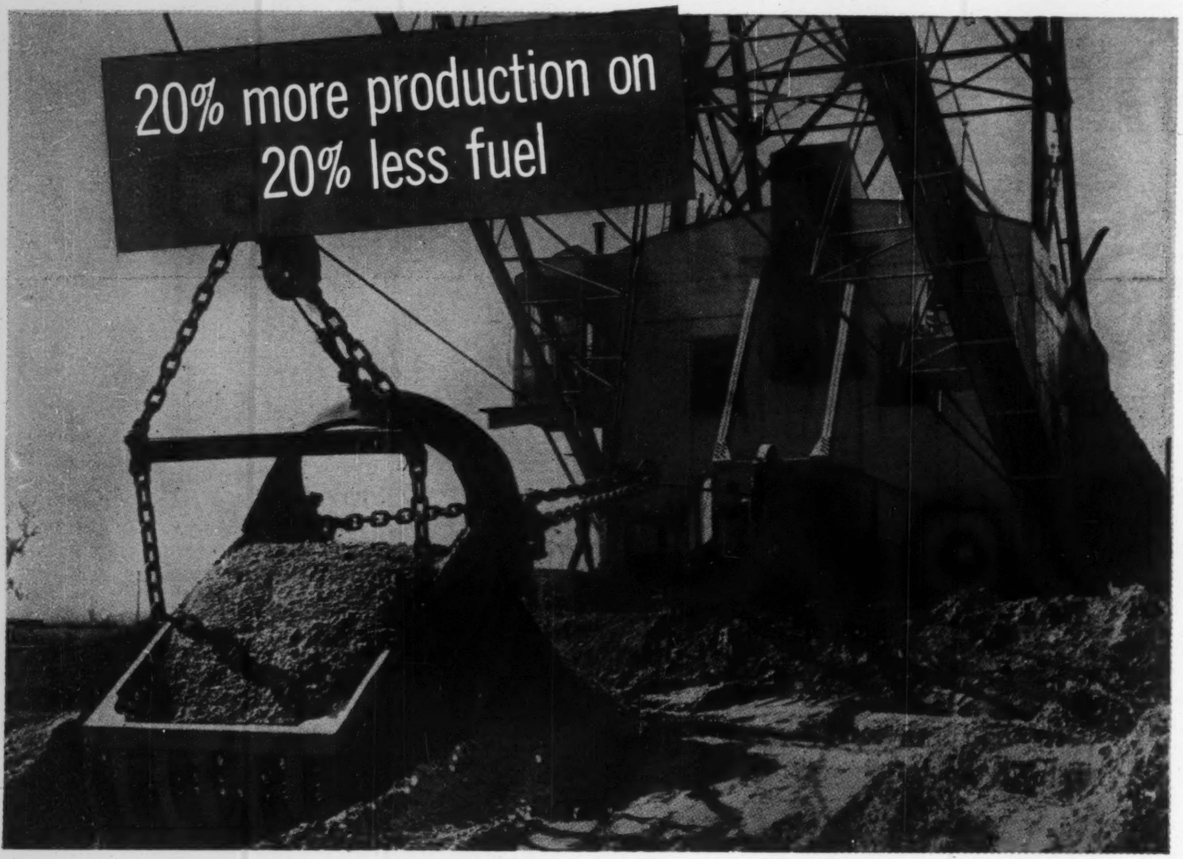
Despite these financial benefits, however, morale on the job began to degenerate quickly during the first week, largely because the men did not fully understand the need for the strange and bewildering safety precautions.

Among them were these:

- **Special clothing requirements.** Each man, upon reporting for work, was required to strip to his underwear and don special "RWP" issue. (RWP stands for "radiation work permit"—a term that has slipped into nuclear vernacular.) This included coveralls, heavy gloves, and rubbers over the shoes. Certain special work required hooded coveralls and leggings to prevent particles from getting in shoes or under clothing. Rubber surgeons' gloves were issued for delicate instrument work. On chilly mornings, the temptation was great to wear regular clothes under the coveralls —a forbidden practice that sent the offender back to the dressing room whenever detected.
- **Continuous clothing changes.** Fresh coveralls were donned morning and noon, or more often if the worker was in an especially hot area, or if he left the area repeatedly. Gloves were sometimes replaced many times a day.
- **General safety discipline.** Pausing to smoke a cigarette, workers had to leave the hot area, discard their gloves and monitor their hands in a special machine before lighting up. Tools could not be borrowed, or moved from site to site within the project area, or be taken out of the area. Scrounging of materials was strictly forbidden.

(Continued on p. 138)

GET REAL PRODUCTIVITY



Boosting equipment work output and cutting costs at the same time is a profitable trick if you can do it. And Texas Construction Material Co., of Houston, has turned that trick by repowering this Bucyrus-Erie walking Monaghan dragline with GM Diesels.

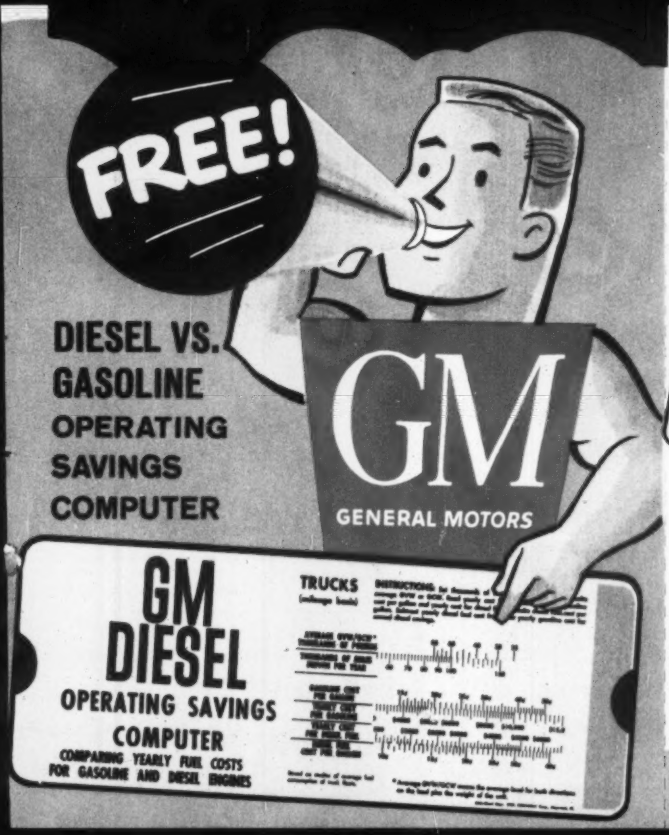
A Quad 6-71 drives the drawworks and a single 6-71 powers the generator-operating boom swing, lights and controls. With a 170-foot boom and 10-yard bucket, the Monaghan now handles many more tons of gravel per day at less cost than with its former 4-cycle Diesel.

TCM had good reason for picking GM Diesels to repower the Monaghan—they've been using "Jimmys" since 1938—26 in all in yard locomotives, belly dumps, draglines, trucks and other equipment and *getting up to eight years between overhauls.*

In addition, the GM Diesel family of engines provided just the unit needed to match power, size and weight requirements for greatest efficiency. And with GM Diesel's wide interchangeability of parts, the new engines could be protected with no increase in current parts inventories.

Wherever *YOU* use engines, you'll find Series 53, 71 and 110 GM Diesels will raise your productivity—and profits. Your GM Diesel distributor can prove it—he's in the Yellow Pages under "Engines, Diesel," or write us direct.

GM DIESEL ALL-PURPOSE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FOR GASOLINE AND DIESEL ENGINES
TRUCKS
(mileage basis)
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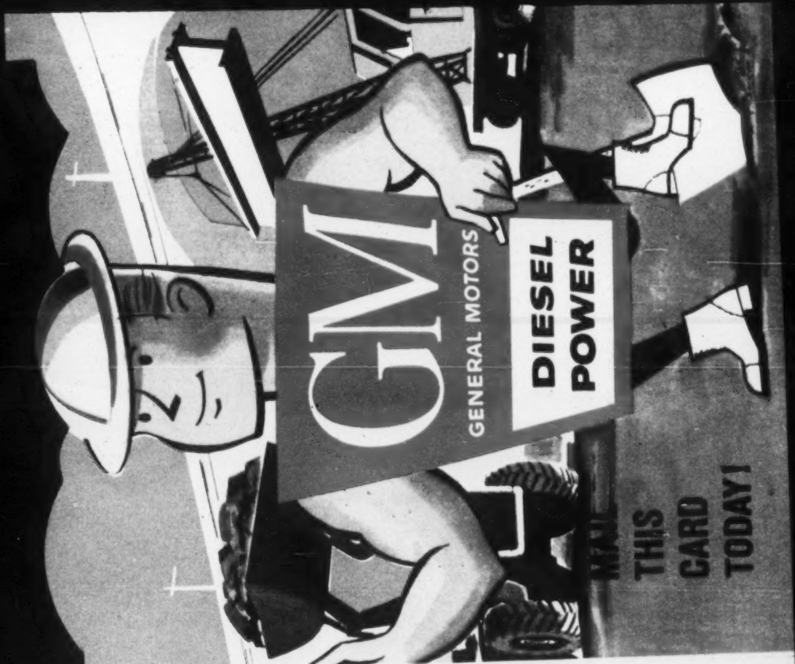
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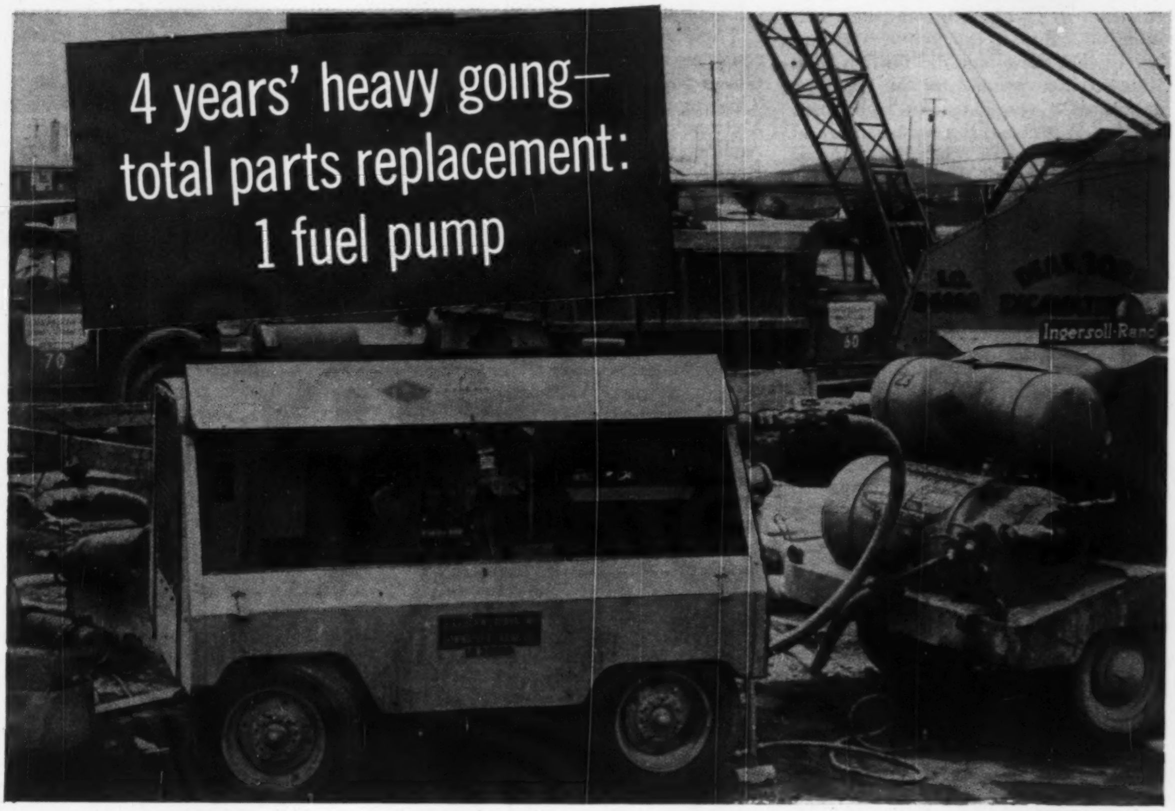
GET A GM DIESEL ENGINE



4 years' heavy going—
total parts replacement:
1 fuel pump

Get equipment that spends more time on the job *earning* money—less time in the shop *costing* money—and you've got yourself a profitable operation. And that's exactly the kind of performance Michigan's Dearborn Excavating Company gets from their GM Diesel engines.

This company and the Downriver Crane Company now have a 3-71 "Jimmy" powering an IR 315 Gyro-Flo Compressor, a 4-53 in an IR 250 Gyro-Flo, a 4-71 in an American 395 crane and another GM Diesel in a Lorain TL 25 crane.

John Curran, president, says, "GM Diesel-powered equipment has helped us earn greater profits because we've had few engine parts to replace and very few service repairs. Replacing only a fuel pump in our first GM Diesel over four years' heavy going in sewer work is one reason why we're for GM Diesel power.

"We've compared GM Diesel with other Diesels and find the "Jimmys" start easier, are less expensive to maintain and deliver the power necessary for a profitable operation."

You'll make more profits *from* your equipment with GM Diesel power *in* your equipment. See your GM Diesel distributor—he's in the Yellow Pages under "Engines, Diesel"—or mail the post card today.

POWER LINE

Sets the standard of Diesel productivity

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GM DIESEL POWER ®

DETROIT DIESEL ENGINE DIVISION,
GENERAL MOTORS, DETROIT 28, MICH.

In Canada: GENERAL MOTORS DIESEL LIMITED, London, Ontario
Parts and Service Worldwide

(*Continued from p. 133*)

- **Cumbersome preparatory procedures.** Before lunch, it was necessary to strip, be monitored from head to foot, and change clothes. The same was true at the close of the day.

G.E. first entrusted safety indoctrination to its engineers and radiation monitors. But it quickly became apparent that these men did not have the time to do two jobs. So the company appointed a young reactor technician, Charles Wittebort, as a liaison man and the morale of the men began to improve within a matter of days.

- **Mr. Wittebort's first move was to hold a general briefing in which he explained that radioactivity—like many other things—can be dangerous but that there are ways to work with it in complete safety.** When workers complained about endless clothing changes and body checks, he pointed out that this was part of the secret of working with radioactivity, and that the men were on a 10-hour day to allow time for all these tedious procedures.

In numerous informal discussions with groups of workers, he explained that the G. E. maximum exposure limit of 40 millirads a day—and three rads a year—is well within the Atomic Energy Commission's limitation on how much radiation a person can safely receive. It was pointed out that the background radiation in the area where most of the work was done—the reactor basement area—was about 5 millirads per hour—which would add up to the total daily maximum only if a worker spent a full eight hours in the work area.

Each man was told about the importance of his dosimeter, or Gama "pencil," for checking radiation exposure. If a doubtful pencil reading showed up, it was explained, the man's film badge could be processed immediately.

- **G. E. reported that no worker received an overdose of radiation during the three months on the project.** But constant policing by Mr. Wittebort was necessary to achieve that record. Occasionally Mr. Wittebort held a meeting of the entire work force in which violations of safety procedures were pointed out without, however, "jumping down anybody's throat."

G. E. thinks it learned an important lesson and plans to adapt the Vallecitos techniques to future jobs of this sort.

"The formal training period need not exceed one good briefing," Mr. Wittebort said, "but that will serve the purpose of putting the men's minds at ease and wiping out some of the misinformation they've been getting. About all we have to do besides that is to provide a better dressing area next time."

Engineers Examine Union Tie

How do municipal engineers feel about unions? Do they object to union affiliation with engineers in manufacturing industries? Do they think AFL-CIO unions are appropriate?

These are some of the questions recently circulated among municipally employed engineers in Los Angeles, Calif. The engineers are represented by the Metropolitan Chapter of Engineers and Architects Association, which is a nationally known federation of West Coast engineering unions.

The replies reflect a desire for some form of representation, disenchantment with the present type of organization, and little agreement on what substitute might be preferred.

As reported by the self-appointed, unofficial committee of Los Angeles engineer-employees who conducted the survey, the answers shaped up like this:

- A majority of the engineers think an AFL-CIO union is not a proper type of organization for engineers and allied technical personnel. This view would prevail even if the California law were changed to permit government workers to strike and to bargain collectively.
- More than half of them feel that municipal engineers should not be affiliated with unions of industrial engineers who can strike and bargain collectively. (Such an affiliation was approved, however, by 63% of the EAA members, although opposed by 73% of the nonmembers.)
- A majority of members and nonmembers favor affiliation with organizations of engineers in other governmental units.
- The engineers are about equally divided on the question of whether engineering and construction personnel can achieve effective representation without the help of outside affiliation.

The Metropolitan Chapter has about 300 members, representing 35% of the engineers eligible to join. Approximately 50% of the engineers are graduate engineers although the remainder are considered engineers on the basis of education and experience qualifications. About 90% of the engineers are civils.

A spokesman for EAA said the survey was conducted without its knowledge or approval and questioned its value.

The survey was purportedly undertaken in an effort to find out why membership in the chapter is "increasingly difficult to sell." A committee spokesman said some engineers who have refused to join have disliked the militancy of EAA's bargaining chapters and have been reluctant to join a group that contains a "hard-bitten core" that desires AFL-CIO affiliation.

Haggerty Maps Road to Peace

C. J. Haggerty, president of the AFL-CIO Building and Construction Trades Department, told members of the construction industry last week that they can best serve their own interests and those of the nation by learning to work with unions, not against them.

Addressing a luncheon meeting of the New York Building Congress in New York City, he suggested that a mutual desire to preserve the free enterprise system will induce labor and management to find the guidelines to lasting industrial peace.

Mr. Haggerty took the position that labor and management are "fellow passengers in the same economic boat" and that their common interests run wide and deep. He urged that the concept of class warfare be rejected and be replaced by a "will" to work together in good faith.

Expressing doubt that a quick panacea can be found, he suggested that industrial peace can be achieved only by "a step by step process." He called the construction industry's National Joint Board, Construction Industry Joint Conference and "Ten Commandments" steps in the right direction and urged building "on that foundation."

He doubted, he said that a formula can be found for the equitable distribution of the wealth workers produce and suggested that the workers' share be determined by collective bargaining. Here, he said the basic problem is establishing an atmosphere for effective bargaining.

Good faith on the part of labor and management, Mr. Haggerty said, is essential. Labor must be assured that employers will not seek to "wreck" unions, and employers must be assured that unions will seek to settle disputes by methods other than work stoppages.

Mr. Haggerty called "firm establishment of union security" a prerequisite to industrial peace. He said one of the big labor problems in the construction industry is the "destructive competition" of nonunion and "unfair" contractors. One answer to this, he stated, is that "the building trades must organize as they have never organized before."

OFFICIAL PROPOSALS

Bids: November 3, 1960

Sanitary Sewer System

BOROUGH OF EMERSON,
BERGAN COUNTY, NEW JERSEY

Sealed bids in triplicate for construction of Sanitary Sewer System—Stage 1, in the Borough of Emerson, Bergen County, New Jersey will be received by the Mayor and Council of the Borough of Emerson, Municipal Building, Linwood Avenue, Emerson, County of Bergen, New Jersey, at 8:30 P.M., E.S.T., on November 3, 1960, at which time and place the bids will be publicly opened and read aloud.

The work will include about 36,000 linear feet of vitrified clay pipe, 8 and 10-inch diameter, and about 11,000 linear feet of asbestos-cement pipe, 8 to 18-inch diameter; manholes, house connections, several crossings under the New Jersey and New York Railroad, about 20,000 square yards of pavement restoration and about 1200 square yards of gravel access road.

The proposal form, drawings, specifications and other Contract Documents may be seen at the office of Tippetts-Abbett-McCarthy-Stratton, 375 Park Avenue, New York 22, New York, or at the Office of the Borough Clerk in the Municipal Building. Copies of the Contract Documents may be secured from the said Office of the Borough Clerk upon the deposit of $25.00 for each complete set, $20.00 of which will be refunded on return of the set in good condition within one week after the award of the contract.

Each bid shall be accompanied by a Bid Guaranty which shall be either a certified check made payable to the Borough of Emerson, or a bid bond satisfactory to the Borough, in the sum of five (5) percent of the amount of the bid.

The right is reserved to reject any or all bids.

BOROUGH OF EMERSON,
JULIUS D. HAMEL
Mayor

October 5, 1960

Bids: December 19, 1960

Mt. Isa Railway Project

QUEENSLAND, AUSTRALIA

Tenders are invited for Schedule of Rates contract for furnishing labour, plant, equipment and material called for by the Contract Documents and performing all work for construction of the following:

MT. ISA RAILWAY PROJECT
CONTRACT NO. 4
BURDEKIN RIVER BRIDGE AT
MACROSSAN AND APPROACHES

The work under this contract includes the construction of the substructure and superstructure of a railway bridge as well as the approaches and track. The proposed bridge, located on the Western Line of the Northern Division of the Queensland Government Railways approximately 70 miles west of Townsville, consists of twelve 70 foot through plate girder spans and six 250 foot truss spans. Approximate quantities of the principal items of work are as follows:

Foundation excavation	8,700 cubic yards
Reinforced Concrete—Piers and Abutments	7,720 cubic yards
Structural Steel (Furnishing, fabrication, erection and painting)	3,055 tons
Embankment Construction	145,000 cubic yards
Trackage	2.10 miles

Contract Documents, comprising Form of Tender, Conditions of Tendering, Agreement, General Conditions, Special Conditions, Specifications and Drawings, may be obtained by prospective Tenderers on or after October 10th, 1960, on written request to:

Ford, Bacon & Davis, Inc.,
Box 443F,
G.P.O., Brisbane,
Queensland, Australia.

Requests for Contract Documents must be accompanied by a cheque for fifteen pounds (£A15.0.0) Australian for each set requested. An additional charge for overseas air mail postage will be made at cost. Payment for Contract Documents is not refundable.

A preliminary deposit in the amount of Five thousand pounds (£A5,000) shall be enclosed with the Tender.

Tenders for the contract must be submitted in duplicate, and shall be enclosed in a sealed envelope appropriately endorsed with the contract number and name of the work and addressed to:

The Secretary,
The Commissioner for Railways,
Railways Building,
Adelaide Street,
Brisbane.

Tenders must be lodged in the Tender Box located on the fourth floor of the offices of the Commissioner or be sent by prepaid post in time to be delivered in ordinary course of mail, by 2 p.m. on 19th December, 1960.

The lowest or any tender will not necessarily be accepted.

Bids: November 10, 1960

New Jersey Turnpike Authority

ADVERTISEMENT FOR PROPOSALS
CONTRACT NOS. R-83A, R-83B, R-83C, R-83D, R-83E AND R-83F

Proposals are invited for Contract Nos. R-83A, R-83B, R-83C, R-83D, R-83E and R-83F which involves the construction of a Charter Bus Stop Building at Service Area 7S of the New Jersey Turnpike in Cranbury Township, Middlesex County, New Jersey, as follows:

Contract No. R-83A—General Construction
Contract No. R-83B—Structural Steel
Contract No. R-83C—Heating and Ventilating
Contract No. R-83D—Plumbing
Contract No. R-83E—Electrical
Contract No. R-83F—Kitchen Equipment

Proposals will be received at the New Jersey Turnpike Authority Administration Building, New Brunswick, New Jersey, until 11:00 o'clock, Eastern Standard Time, on the morning of November 10, 1960, at which time and place said proposals will be publicly opened and read.

Each bidder must submit with his proposal a Contractor's Financial and Equipment Statement.

Contract documents may be examined during office hours on or after October 17, 1960 at the office of the Authority, and will be furnished upon payment of Ten Dollars ($10.00) for each set, not refundable.

NEW JERSEY TURNPIKE AUTHORITY
Joseph Morecraft, Jr., Chairman

October 6, 1960

Bids: November 3, 1960

La Guardia Airport Temporary Control Tower Electrical Installation

THE PORT OF NEW YORK AUTHORITY
CONTRACT LGA-350.001

Sealed proposals for the sale of materials and performance of Work for the electrical installation for the Temporary Control Tower at La Guardia Airport will be received at the office of the Chief Engineer of the Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Thursday, November 3, 1960, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the Office of the Assistant Chief Engineer for Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman

New York, Thursday, October 13, 1960

Bids: November 2, 1960

City of Richmond, Virginia

NOTICE TO BIDDERS

Sealed proposals will be received at the office of the Director of General Services, 2907 North Boulevard, Richmond, Virginia, until but not later than 11 o'clock A.M. E.S.T., November 2, 1960, at which time they will be publicly opened and read aloud, for the following work:

> The replacement of the North Richmond Road Combined Sewer and miscellaneous related work, from Lancaster Road to Rennie Avenue and Loxley Road in the City of Richmond, Virginia

The Proposal, Plans and Specifications may be examined at the office of the Director of Public Works, 217 Governor Street, Richmond 19, Virginia. Copies of the Contracts Documents may be obtained from the office of the Director of Public Works upon the deposit of Fifteen Dollars for each set, which sum will not be refunded unless a bonafide bid is submitted.

J. W. Huffman
Director of General Services

U. S. Government

Sealed bids will be received in the office of the Engineering and Construction Director, Panama Canal Company, Balboa Heights, Canal Zone, until 1:00 PM, E.S.T., November 9, 1960 and will at that time be publicly opened, for the construction of Pacific Side Sewage Disposal Sewage in the Canal Zone. The work consists of construction of primary treatment plant, chlorinating building, two pump stations, 11,700 lineal feet of sanitary interceptor sewers, and 1,730 lineal feet of outfall sewers. Plans and specifications are available for examination in Procurement Office, Panama Canal Company, 21 West St., New York 6, N. Y. Complete sets of data may be obtained upon payment of $50.00 deposit which will be refunded if data are returned within 40 calendar days after the bid opening. For further information call BOwling Green 9-5380, Extension 73. Reference PC 61-17.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5420) will be received at Huron, South Dakota, until 10 a.m., Central Standard Time, November 17, 1960, for furnishing labor and materials for Multichannel Microwave Radio Communication System. Location South Dakota. The item is. Lump Sum—Furnishing, installing and maintaining complete microwave radio system between Watertown, Huron and Fort Thompson Substations; Oahe and Fort Randall Powerplants; Huron Project Office and Wessington Springs VHF Radio Station; and other work. Completion time 360 days. For particulars, address Bureau of Reclamation, P. O. Box 2553, Billings, Montana; P. O. Box 825, Huron, South Dakota; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

OFFICIAL PROPOSAL

RATE: $2.40 per line (or fraction) per insertion.

CLOSING DATE: 10:30 a.m. Friday for issue out following Thursday.

SEND COPY: Official Proposal Division, Engineering News-Record, P. O. Box. 12, New York 36, N. Y.

Bids: Oct. 20, 1960

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law and Canal Law Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 20th day of October, 1960, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 2, L. Ketchum, District Engineer, 109 No. Genesee Street, Utica 1, New York						
Herkimer (Rte. 28)	R.C. 60–170	Old Forge-McKeever, SH 462	7.91	8" Cem. Conc. Pavt. 24′ Wide = 7.56 Mi. Misc. Work = 0.35 Mi.	$126,000 Plans $5	$2,289,000
Oneida	M-60–11	Stony Brook Bridge E-57, East of New London	....	Cleaning & Painting Bridge........................	$130 Plans $5	2,600
DISTRICT No. 3, E. E. Towlson, District Engineer, 333 E. Washington Street, Syracuse, New York						
Cayuga & Oswego (Rte. 104)	R.C. 60–169	Red Creek-Southwest Oswego, Pt. 3, SH 8214 Red Creek-Southwest Oswego, Pt. 4, SH 8189 Red Creek-Southwest Oswego, Pts. 1 & 2 & 4, SH 5717	10.38	Asph. Conc. Type 1A Twin Conc. Box 2 Spans 30′ Total	$125,000 Plans $5	2,130,000
Onondaga (Rtes. 174 & 20N)	FARC 60–165 FASS 60–15	Skaneateles-Lafayette, Pt. 2, SH 8360 Marietta-Marcellus, SH 971 Skaneateles-Marcellus, CR 41 Proj. F-470(19); F-484(4); S-521(1)	5.34 (1.36 Acc.)	Asph. Conc. Type 1A = 6.70 Mi. Incl. 16′ x 7′ Twin Conc. Box—20′ x 9′ Twin Conc. Box	$85,000 Plans $5	1,518,000
Tompkins	FASS 60–16	Peruville-McLean, CR 107 Proj. S-283(3)	3.19	Asph Conc. Type 1A	$23,000 Plans $5	411,000
DISTRICT No. 4, B. F. Perry, District Engineer, Barge Canal Terminal, Rochester 1, New York						
Livingston & Ontario (Rte. 20A)	R.C. 60–145	Honeoye-Vincent, SH 8178 Honeoye-Hemlock, SH 191 Livonia-Ontario County Line, SH 717	5.87	Asphalt Concrete, Incl. Bridge Rehabilitation	$48,000 Plans $5	843,000
DISTRICT No. 5, E. G. H. Youngmann, District Engineer, State Office Bldg., 65 Court Street, Buffalo 2, New York						
Erie	FINTC 60–2 PSC 15216	Louisianna Street Viaduct over the N.Y.C. and Erie Railroads; Int. Rte. 506, New York State Thruway-Niagara Section (Louisianna Street Viaduct) Project I-190–1(23)74	0.39	Asph. Conc. Type 2A = 0.15 Mi.; Cem. Conc. Pavt. = 0.19 Mi.; Misc. Work = 0.05 Mi. Multiple Span Comp. Beam 825′ Total	$85,000 Plans $5	1,525,000
Erie & Niagara	M 60–9	Erie Canal—Br. E-225 (Wakeman's) Br. E-242 (Pickard's)	....	Clean & Paint. 2 Bridges—Total 475± Tons	$800 Plans $2 for 2 Proposals	15,000
Niagara	PSC 6607	Elimination of Highway Railroad Crossings of the N.Y.C., Erie and Niagara Jct. Railroads in the City of Niagara Falls and Town of Niagara	3.14	Railroad Reloc. = 3.14 Mi.; Cem. Conc. Pavt. = 2.85 Mi.; Bit. Mac. = 1.99 Mi. Stab. Grav. = 0.57 Mi. 5 Hg Seps & 2 R.R. Pl. Gird. Bridges	$410,000 Plans $10	7,491,000
DISTRICT No. 7, R. W. Sweet, District Engineer, 444 Van Duzee Street, Watertown, New York						
St. Lawrence (Rte. 37)	FARC 60–174	Ogdensburg-Morristown, Pt. 2, SH 968 Project F-FG-650(9)	1.39 (0.31 Acc.)	Asph. Conc. Type 1A = 1.37 Mi.; Misc. Work = 0.02 Mi.; Access = 0.20 Mi.; Asph. Conc. Type 1A; 0.11 Mi. Gravel; Prestressed Conc. Beam 3 Sp. 184′± Tot.	$45,000 Plans $5	788,000
DISTRICT No. 8, K. G. Rauer, District Engineer, Pleasant Valley Road, Poughkeepsie, New York						
Orange (Rte. 42)	R.C. 60–167	Port Jervis-Sullivan County Line, Pt. 1, SH 412 Port Jervis-Sullivan County Line, Pt. 2, SH 448	5.14	Asph. Conc. Twin Reinf. Conc. Closed Box 35.8′ Sep.	$53,000 Plans $5	961,000
Westchester (Rte. 22)	R.C. 60–168	Bedford-Goldens Bridge, SH 5298A Goldens Bridge-Purdy-Croton Falls, SH 5464 Peekskill-Salem Center, Pt. 2, SH 262	4.65 (2.11 Acc.)	9" Cem. Conc. Pavt. 2 @ 24′ & Var. = 4.81 Mi.; Asph. Conc. = 0.16 Mi.; Bit. D.S. Treat. = 1.79 Mi.; H.G.S. Comp. I-Beam 4 Spans 188.4′ Total; H.G.S. Rigid Frame, 1 Span 40.84′; Bridge Comp. I-Beam, 2 Spans 110.7′ Total	$245,000 Plans $5	4,444,000
DISTRICT No. 9, J. C. Federick, District Engineer, 71 Frederick Street, Binghamton, New York						
Broome (Rtes. 26 & 17C)	FARC 60–177	Vestal-Vestal Center-Choconut, SH 8331 Vestal, SH 420 Union Village: Main and Bridge Sts., SH 5412 Endicott, SH 174 Project U-UG-482(3)	1.49 (4.24 Acc.)	9" Cem. Conc. Pavt., 2 @ 24′ & Var. = 1.47 Mi. Misc. Work = 0.02 Mi.; Access = 1.65 Mi. Cem. Conc. Pavt.; 0.69 Mi. Cem. Conc. Pavt. with Carbon Black; 1.85 Mi. Asph. Conc.; 0.05 Mi. Asph. Conc. Type 2B Hy. R.R. Gr. Sep. Comp. I-Beam, 5 Sp. 300.3′ Total Repairs to Exist. Bridge over D.L. & W.R.R. H.G.S., Comp. I-Beam, 4 Sp. 207.5′ Total; Bridge-Welded Pl. Gird., 7 Sp. 991′ Total; H.G.S. Comp.-I-Beam & Gird. 3 Sp. 170′ Total	$320,000 Plans $10	5,771,000
Broome (Rte. 11)	R.C. 60–173	Castle Creek, SH 267	0.52	Asph. Conc. Type 1A = 0.52 Mi. Bridge Comp. I-Beam 33′ Span	$8,500 Plans $5	155,000
Broome (Rte. 26)	R.C. 60–171	Maine, SH 374	0.35	Asph. Conc. Type 1A, Incl. Prestressed Beam Bridge—64.6′ Sp.	$8,000 Plans $5	145,000
Broome (Rte. 26)	R.C. 60–172	Maine, SH 374 Maine-Glen Aubrey, SH 1449	0.23	Asph. Conc. Type 1A = 0.23 Mi. Incl. Conc. Slab Bridge, 25.5′ Span	$4,800 Plans $5	86,000
Sullivan (Rte. 17)	R.C. 60–176	Liberty-County Line Pt. 2, SH 5234	0.18	Asph. Conc. Type 1A, Incl. Comp. I-Beam Bridge 113′ Span	$11,000 Plans $5	197,000
DISTRICT No. 10, Austin M. Sarr, District Engineer, 325 W. Main Street, Babylon, L. I., New York						
Bronx (Int. Trg. Rte. 95)	FICBE 60–4	Interstate Route Conn. 511 Cross Bronx Expressway Cont. 4 (Plimpton Ave. to Walton Ave.) Project EI-95-1(44)2	0.53 (1.16 Acc.)	9" Cem. Conc. Pavt. with Carbon Black, 2 @ 37′ Wide and Var. = 0.50 Mi.; Misc. Work = 0.03 Mi.; Access = 0.44 Mi. Cem. Conc, Pavt.; 0.57 Mi. Asph. Conc. Pavt. 0.15 Mi. Misc. Work; H.G.S. Comp. Gird. 3 Sp., 224.8′ Total; H.G.S. Conc. T-Beam 2 Span & Comp. Gird. 1 Span 188.2′ Total; H.G.S. Conc. Frame 2 Span 115.2′ Total; Hwy. RRg. S. Conc. & Steel Frame, 2 Span Plate Girder, 2 Span Conc. Frame 1 Span 396.7′ Total	$575,000 Plans $10	10,439,000
Bronx (Int. Trg. Rte. 278)	FIASE 60–1	Int. Rte. Conn. 517 Arthur V. Sheridan Expressway Cont. 2 (Lowell Street to East Tremont Avenue) Project EI-278-1(45)	0.98 (1.39 Acc.)	9" Cem. Conc. Pavt. with Carbon Black, 2 @ 36′ Wide and Var. = 1.30 Mi.; Asph. Conc. Pavt. = 0.68 Mi. Grading = 0.39 Mi.; H.G.S. Pl. Gird. Comp. I-Beam 2 Sp., 131′ Total; Viaduct Comp. I-Beam, 8 Span, 595′ Tot.; Viaduct Steel Beam, 9 Sp. 445.8′ Total; 2 Ped. Ramps, Comp. I-Beams, 8 Sp. 534′ Total	$308,000 Plans $10	5,594,000
Kings (Int. Trg. Rte. 278)	FIGE 60–3	Interstate Route Connection 512 Gowanus Expressway, Cont. 2 (Hamilton Ave., Clinton St. to Second Avenue) Project EI-278-1(54)15	0.61 (0.57 Acc.)	7½" Reinf. Conc. Slab Roadway (on Viaduct) = 0.56 Mi.; Misc. Work = 0.05 Mi.; Sheet Asph. Pavt. (St. Repairs) = 0.57; Widen and Strengthen Exist. Elevated Steel Structure, 33 Spans = 294.6′ Total	$600,000 Plans $5	10,378,000
Suffolk	FALIE 60–3	Long Island Expressway, Cont. 11 (Deer Park Ave. to Commack Rd.) Project U-862(28)	2.67 (3.43 Acc.)	9" Cem. Conc. Pavt. with Carbon Black, 2 @ 36′ = 2.56 Mi.; Misc. Work = 0.11 Mi.; Access = 0.80 Mi. Cem. Conc. Pavt; 2.63 Mi. Asph. Conc. Pavt.; H.G.S. Comp. WF Beam, 4 Span 226.6′ Total; H.G.S. Double Struct. Comp. WF. Beam 3 Span 128.4′ Total	$200,000 Plans $5	3,710,000
Suffolk	HSPTS 60–2	Hecksher State Parkway, Cont. No. 4 Sunrise Highway to Hecksher State Park	6.27 (4.43 Acc.)	Traffic Signs	$1,800 Plans $5	32,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

If the deposit is $10.00 or more, full refund for one copy of the plans and specifications will be made to a bidder for the particular project, if such plans and specifications are returned in good condition within 30 days after the award of the contract or after the rejection of the proposal. The successful bidder is not required to return the copy of the plans and specifications in order to be entitled to such refund. If the deposit is $10.00 or more, partial refund will be made for the return of all other copies of plans and specifications in good condition within 30 days after the award of the contract or the rejection of the proposal.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

(*Continued on following page*)

(Continued from preceding page)

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

District of Columbia—Highway Construction—Dept. of Hwys. & Traffic, Sept. 26, 1960. SOUTHWEST FREEWAY INNER LOOP—CENTER LEG CONNECTION — RAILROAD STRUCTURES AND ROADWAYS, FEDERAL AID INTERSTATE PROJECT NO. I-IG-95-1(6)2—Invitation No. C-6138-H, consisting of 15,372 cu. ft. Class A Dimensioned Masonry; 5,598,000 lbs. Structural Steel; 7,479 cu. yds. Class BB substructure concrete; 1,290,626 lbs. Reinforcing Steel; and 24,190 cu. yds. structure excavation. (This project includes construction of one (1) four-track and one (1) two-track railroad structures with temporary track detours and one (1) highway structure). The Labor Dept. has predetermined the wage rates which will be incl. in Addendum No. 1. Bid forms, plans and specifications are now available from Supervisor, Bid & Contract Division, Procurement Office, D. C., Room 404, 499 PA. Ave., N.W., upon deposit of a certified check for $50.000 per set, payable to D.C. Treasurer (Phone NA 8-6000, Ext. 2378). SEALED BIDS to be opened 3:00 PM. EST, Nov. 1, 1960, in Room 424, 499 PA. Ave., N.W.

Bids: November 15, 1960

Sewage Works Improvements

UPPER ALLEGHENY JOINT SANITARY AUTHORITY
ALLEGHENY COUNTY, PENNSYLVANIA

Sealed proposals will be received by the Upper Allegheny Joint Sanitary Authority, Allegheny County, Pennsylvania, at the office of the Secretary of the Authority, until 7:30 PM E.S.T. time, November 15, 1960, for construction of the Sewage Works Improvements as follows:

Division A	12,800 lineal feet, 15" to 30", reinforced concrete pipe and vitrified clay pipe sewers. 1,500 lineal feet of 6" to 12" cast iron pipe sewers.
Division B	7,300 lineal feet of 24" force main, 650 lineal feet of cast iron pipe sewers, 8,400 lineal feet of 10" to 42" reinforced concrete pipe and vitrified clay pipe sewers.
Division C	1,900 lineal feet of 30" river crossing pipe, 19,300 lineal feet of 8" to 30" reinforced concrete and vitrified clay pipe sewers, 400 lineal feet 10" to 14" cast iron pipe sewers.
Division D	Sewage Treatment Plant of the Intermediate Type, having a nominal capacity of 6.0 M.G.D. and Pumping Station, having a nominal capacity of 5.4 M.G.D., consisting of five Sections:

Section I	General Construction
Section II	Electrical
Section III	Plumbing
Section IV	Space Heating
Section V	Ventilation

all according to Contract Plans and Contract Documents which are on file at the office of the Secretary of the Authority. Immediately after closing time for receipt of bids, the Authority Board will convene at a meeting in the Commissioners' Meeting Room, 41 Chestnut Street, Natrona, Allegheny Co., Pennsylvania where bids will be publicly opened and read aloud.

The successful bidder will be required to furnish satisfactory Performance and Labor and Materialman's Bonds.

Copies of the Plans and Specifications may be obtained by depositing Thirty-Five Dollars ($35.00) for Divisions A, B, and C, and Eighty-Five Dollars ($85.00) for Division D, with the Secretary of the Upper Allegheny Joint Sanitary Authority for each set of documents so obtained, the amount of which deposit will be refunded to each actual bidder, and half will be returned to

all others who return Plans and Specifications in good condition within ten (10) days after the opening of the proposals.

The Upper Allegheny Joint Sanitary Authority reserves the right to reject any and all proposals and to waive any informalities in the proposals.

A Certified Check or Bank Draft payable to the Upper Allegheny Joint Sanitary Authority, or a satisfactory Bid Bond executed by the bidder and a surety company, in an amount equal to at least ten percent (10%) of the bid, shall be submitted with each proposal.

No bid shall be withdrawn until ninety (90) days after the time of closing for the receipt of proposals.

Plans and Specifications for this project were prepared by Consoer, Townsend and Associates, 360 East Grand Avenue, Chicago 11, Illinois, and 717 Liberty Avenue, Pittsburgh 22, Pennsylvania.

Dated this 10th day of October, 1960.

UPPER ALLEGHENY
JOINT SANITARY AUTHORITY
Chester Grove, Secretary

Bids: January 7, 1961

Development of The Port of Rangoon

BOARD OF MANAGEMENT FOR THE PORT OF RANGOON
SULE PAGODA WHARVES NOS. 5, 6, AND 7
CONTRACT NO. 3
WHARF CRANES

TENDERS FOR THE SUPPLY, DELIVERY AND SUPERVISION OF ERECTION IN THE PORT OF RANGOON OF SIX 3-TON ELECTRIC LEVEL-LUFFING PORTAL CRANES

(1) The Board of Management for the Port of Rangoon invite crane building firms to tender for the supply, delivery, and supervision of erection in Rangoon of Six 3-Ton Electric Level-Luffing Portal Cranes for operation on their Sule Pagoda Wharves Nos. 5, 6, and 7.

(2) Tender Documents consisting on Instructions to Tenderers, Form of Tender, Agreement, Board's Conditions of Contract, Specification and Schedules may be obtained from the office of the undersigned on payment of K.100 per set or from Sir Alexander Gibb & Partners, Consulting Engineers, Queen Anne's Lodge, Westminster, London, S.W.1. on payment of £8. per set.

(3) Tenders in duplicate must be submitted in sealed envelopes addressed to: The Chairman, Board of Management for the Port of Rangoon, Post Box No. 1, Rangoon, Burma, and marked "Tender for Wharf Cranes". Tenders must reach the above office not later than 12. noon on 7th January, 1961 or be posted to the above mentioned address sufficiently early to arrive on or before the appointed time and date.

(4) The Board does not bind itself to accept the lowest priced or any tender or to assign any reasons for rejection of any tender.

WIN PE
COMMISSIONER

Bids: November 1, 1960

Frederiksted Pier

FREDERIKSTED, ST. CROIX
U. S. VIRGIN ISLANDS

Sealed bids will be received until 12 noon on November 1, 1960 and then publicly opened by the Contracting Officer, Government of the Virgin Islands, Department of Property and Procurement, Old Grammar School Building, Christiansted, St. Croix, U. S. Virgin Islands for the construction of a deep water pier in Frederiksted Harbor at at the town of Frederiksted, St. Croix, U. S. Virgin Islands.

Information regarding bidding material, bid guarantee, and bonds, plans and specifications and other contract documents are open for public inspection at the following locations:

1. Office of the Division of Procurement in Christiansted, St. Croix, U. S. Virgin Islands.
2. Office of the Division of Procurement in Charlotte Amalie, St. Thomas, U. S. Virgin Islands.
3. Office of the Deputy Commissioner, Department of Public Works, Christiansted, St. Croix
4. Office of the Commissioner, Department of Public Works, Charlotte Amalie, St. Thomas

(Continued on page 150)

5. Office of the Public Works Advisor, Office of Territories, Room 6543, Interior Building, Washington, D. C.
6. Praeger-Kavanagh, 126 East 38th Street, New York 16, New York

Plans and specifications may be procured from the Office of the Contracting Officer, Division of Procurement, either in Christiansted or Charlotte Amalie, or from the Office of Praeger-Kavanagh, New York upon a deposit of $20.00. Deposit shall be only by certified check payable to the Government of the Virgin Islands, which will be refunded to bona fide bidders upon the return of plans and specifications in good condition within sixty (60) days of the date of bid opening. A bona fide bidder will include any person who submits a bid for the general contract. Fifteen dollars ($15.00) will be refunded to persons who procure plans and specifications but do not submit a bid, upon the return thereof in good condition within sixty (60) days from bid opening. No refund will be made after that time.

Each bid must be accompanied by a satisfactory bid guarantee in the amount of 5 percent of the total bid.

The successful bidder will be required to furnish performance and payment bonds, each in the amount of 100 percent of the contract price. Sureties must hold certificates of authority from the Secretary of the Treasury for bonding in the U. S. Virgin Islands. No bid may be withdrawn until 45 calendar days after the scheduled closing time to receive bids.

The Government of the Virgin Islands reserves the right to select the successful contractor or to refuse all bids or to pursue any other course which may be in the best interest of the Government of the Virgin Islands.

Bids: Oct. 20, 1960

Soils Explorations and Foundation Investigations Staten Island, N. Y. Contract Spec. #SM-173

NOTICE TO CONTRACTORS

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 a.m. Advanced Eastern Standard Time, on October 20, 1960, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y. for:

> SOIL EXPLORATIONS AND FOUNDATION INVESTIGATIONS AT VARIOUS SITES ON RICHMOND PARKWAY FROM PLEASANT PLAINS BOULEVARD TO OCEAN TERRACE ON STATEN ISLAND, RICHMOND COUNTY, WHICH CONSTITUTES CONTRACT SPEC. NO. SM-173.

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany 1, New York.
(b) Mr. Austin M. Sarr, District Engineer, New York State Department of Public Works, 325 West Main Street, Babylon, Long Island, New York.
(c) Mr. William Mende, Principal Building Construction Engineer, Department of Public Works, 270 Broadway, New York City.

The deposit for a set of plans, specifications and proposal forms is $5.00. Refunds of deposits for plans, specifications and proposals will be made *only* in case the deposits of individual sets are $10.00 or more, per Chapter 835, Laws of 1960.

The Engineer's Estimate of cost for this work is $50,725.00.

Proposal for this contract must be submitted in separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $3,000.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidder."

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPERINTENDENT OF
PUBLIC WORKS

EMPLOYMENT NATIONAL COVERAGE OPPORTUNITIES

DISPLAYED RATE:

The advertising rate is $39.20 per in. for all adv. appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch is measured 7/8" vertically on a column—3 columns—30 inches to a page.

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Box numbers—count as 1 line.
Discount of 10% if full payment is made in advance for 4 consecutive insertions.

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Individual should be a graduate engineer with at least 10 years experience in all phases of industrial construction projects, including contacts with contractors, city officials, utility engineers, material suppliers, etc.

Please submit complete resume, including salary history, to

P-5428, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

Engineer—Electric Furnace Design

The Carborundum Company requires a manager of engineering design who had had substantial experience in the electric furnace field. Applicants must be highly qualified graduate engineers who are capable of assuming responsibility for the design and implementation of high temperature material manufacturing facilities. Reply with full particulars to

Mr. H. A. Pilkey
Manager of Salaried Personnel
THE CARBORUNDUM COMPANY
Niagara Falls, New York

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With Chemical Plant Design Experience

Local design company needs an estimator experienced in directly developing estimates for complete chemical plants or petroleum refineries. Applicant should have a minimum of 5 years experience in all phases of estimating such as cost of fabricated equipment, electrical, piping, civil and instrument take-offs. A graduate engineer is preferred. Salary commensurate with experience. REPLY in detail concerning experience, training, salaries earned and expected to:

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Personnel Manager
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2 Park Ave, NY 16, NY

Building Construction Superintendents, Field Superintendents, Field Engineers, Masonry Superintendents, Carpenter Superintendents
POSITIONS OPEN WITH
JOHN W. ROUSE CONSTRUCTION CORP.
Send Resume to "Personnel Department"
Box 236, Gouverneur, New York

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experienced in design work on Oil Refineries, Chemical Plants, Heavy Industry or any type of Steel Plant or Steel Plant Equipment design. Applications will be kept confidential.

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• POSITIONS VACANT

Field Supervisor. Large established midwest consulting firm has permanent position in building construction supervision for thoroughly qualified and experienced man. Mechanical engineer preferred. Moving expenses paid. Send complete resume to P-4833, Engineering News-Record.

Assistant To City Engineer. Salary to $6,588. Fringe benefits. Opportunity for varied design and construction experience. Large city planning, street, sewer and expressway programs under way. Write City Manager, Zanesville, Ohio before November 1.

Permanent position open for civil engineer with 5 to 10 years general experience in municipal engineering. Must have substantial experience in water and sanitary engineering fields, including treatment works. Salary open. Age limit 40 years. Reply to Parker and Associates, Consulting Engineers, 1714 9th Street, Greeley, Colorado.

Estimator—Engineer; Progressive, Expanding commercial and industrial building contractor in Louisville, Ky. Requires young man with growth potential. Two years minimum experience. Grow with the South. Replies held strictly confidential. Our employees know of this ad. Write brief resume, salary expected, and availability to P-5323, Engineering News-Record.

Director of Specifications Department. Large Midwest consulting firm has immediate opening for capable individual with broad experience in specification writing for all branches of building construction work. Must also possess administrative ability. Send complete resume of educational background and experience, including personal qualifications and small photograph to P-5347, Engineering News-Record.

Have opening for recent Civil Engineer Graduate with military obligations completed who desires to learn the construction business. Must be ambitious, aggressive, dependable, use no intoxicants, willing to start in the field on industrial buildings and heavy construction, and willing to move. Must be single. We operate throughout Kansas and adjacent states; offer excellent opportunity for advancement. Martin K. Eby Construction Company, Inc., P.O. Box 1679, Wichita, Kansas.

Comptroller-Accountant for large general contractor's office to take charge of all bookkeeping. Must have experience in general contractor's office in similar capacity. Age 35 to 45. When writing, advise educational background, experience, salary requirements. Permanent position in Washington, D.C. for right party. P-5392, Eng. News-Record.

(Continued on page 144)

CONSTRUCTION SUPERINTENDENT

Minimum 15 years experience in chemical plant construction. Graduate civil or mechanical engineer preferred. Must be willing to relocate within United States.

Reply fully and in confidence to:

PAUL S. MONROE
Vice-President
SD PLANTS INCORPORATED
2 Park Avenue
New York 16, N. Y.

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For combination heavy general construction and mechanical work on power plant, paper mill, atomic energy contracts and similar type specialized general contracts thruout greater southern states area. Apply **BY LETTER ONLY** to:

Kaminer Construction Corporation
P.O. Box 227, Chamblee, Georgia

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Minimum investment $50,000.00

Annual income should equal investment
Send complete resume first letter

P-4350—Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

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Must Know Road Building and/or Municipal Field

Responsible position in a fast-growing publishing enterprise is open to a civil engineer qualified by experience to serve the highway or municipal engineering and construction field. Must show enough developed journalistic ability to handle nation-wide field methods reporting and convention assignments with brief training. Age 30—50. Location Chicago. Half-time travel.

Your letter covering educational background, professional and writing experience, and salary requirements will be kept in complete confidence. Our present staff knows of this opening.

P-5419, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

WANTED

Hydraulic Dredging Manager

Capable of estimating, obtaining work, and supervising operations. Reply to

P-5307, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

PROJECT SUPERINTENDENT

STEAM ELECTRIC STATION, OVERSEAS

To supervise construction and start-up of 50,000 kw station in Far East. Heavy power plant construction experience required at same level of responsibility. ME or EE university degree preferred. Local living allowance and family accommodation. Two year minimum field tour starts about March 1, 1961 preceded by 2-4 months assignment in N. Y. design office. This is a responsible position with a reputable consulting firm. Send complete resume and references to

P-5308, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

CIVIL ENGINEER

Permanent new position for graduate civil engineer in the salary range of $511 to $588 a month (plus longevity pay). Vacation, sick leave, dual pension program, and other fringe benefits. Must be U.S. citizen and possess an EIT certificate. Some related experience desired to work in design and construction of sewer, water, street, sidewalks, and curbs. Travel expenses paid on invitation and moving expenses paid for selected candidate. Personnel Dept., 404 City-County Bldg., Madison 9, Wisconsin.

ARCHITECTS

Permanent positions in our St. Louis office for graduate Architects or equivalent experience. Prefer men who have had experience as job captain for the design of industrial and institutional type buildings. Architectural services include preparation of both preliminary and final architectural designs, plans perspective and renderings.

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Permanent position in our Architectural Section for an experienced person for the preparation of specifications and cost estimates.

Positions offer long range employment with opportunity for professional development. Many company benefits including paid vacation, sick leave, holidays. Excellent retirement plan.

Submit complete resume include salary data.

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SOILS AND MATERIAL ENGINEER

Consulting engineering firm with international reputation located in Midwest wants man with 5 to 10 years experience. Work divided between design office and field. Capable of preparing specifications and drawings for all phases of soils and foundation work.

CONCRETE ENGINEER

Also wants concrete engineer and technician with 5 to 10 years experience, capable of preparing specifications and directing start of mixing operations on large projects. Should be capable of acting as trouble shooter on aggregate and cement problems. Send detailed resume, including salary requirements to

P-5358, Engineering News-Record
520 No. Michigan Avenue, Chicago 11, Ill.

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(Continued from page 142)

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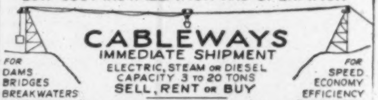

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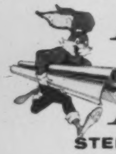

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OFFICIAL PROPOSALS

(*Continued from page* 141)

Bids: November 2, 1960

Sewerage System East Pennsboro Township, Penna.

Sealed proposals will be received by the East Pennsboro Township Authority, (Attention: C. D. Brandt, Secretary), 243 West Columbia Road, Enola, East Pennsboro Township, Cumberland County, Penna., until 8:00 P.M. Eastern Standard Time, November 2, 1960, at which place and time, or shortly thereafter they will be publicly opened and read. Proposals shall cover furnishing all necessary labor, materials, and equipment, and performing all work for the Contracts noted below. Separate proposals will be received upon the several parts of the project as hereinafter indicated. Each proposal shall be accompanied by a certified check or bid bond in an amount not less than ten (10) percent of the bid total, all in accordance with the provisions contained in the Contract Documents. The proposals may be mailed to the above address of the East Pennsboro Township Authority, or may be delivered to the same address between 7:00 P.M. and 8:00 P.M. Eastern Standard Time, November 2, 1960.

Copies of the Contract Documents, including Drawings and Specifications, not to exceed two (2) sets of any particular Contract to a prospective bidder, may be obtained only from the office of Gannett Fleming Corddry & Carpenter, Inc., Engineers, 600 North Second Street, Harrisburg, Pennsylvania, upon deposit of the following indicated amounts for each set. Checks presented as deposit for Contract Documents shall be made payable to Gannett Fleming Corddry & Carpenter, Inc.

CONTRACT ONE	CONSTRUCTION OF EXTENSIONS TO EXISTING SEWERAGE SYSTEM . . $35.00
(Part A)	Construction of Southeast Trunk Sewer and all Sewers on and north of Poplar Church Road (L. R. 2021) tributary there to; all sewers tributary to the Southeast Pumping Station; and the Force Main from the Southeast Pumping Station to Manhole 531 on Poplar Church Road.
(Part B)	Construction of Southwest Trunk Sewer from Manhole 603 to the Southwest Pumping Station, and the Force Main from the Southwest Pumping Station to Manhole 534 on Poplar Church Road.
(Part C)	Construction of Conodoguinet Trunk Sewer and all Sewers tributary thereto.
(Part D)	Construction of all sewers south of Highway L. R. 770 and tributary to the Southeast Trunk Sewer at Manhole 597.
CONTRACT TWO	CONSTRUCTION OF PUMPING STATIONS AND ADDITIONS TO SOUTH TREATMENT PLANT $35.00
CONTRACT THREE	ELECTRICAL WORK IN CONNECTION WITH CONSTRUCTION OF PUMPING STATIONS AND ADDITIONS TO SOUTH TREATMENT PLANT. $35.00

Full refund will be made only to actual bidders on the Contracts noted above, for return of one (1) set, no more, of a particular Contract in good condition within fifteen (15) calendar days after closing date for receipt of bids; refund for return of all other sets in good condition within the same period, will be fifty (50) percent of deposit. No refund of deposit will be made for Contract Documents returned later than fifteen (15) calendar days after date of receipt of bids.

Copies of the Contract Documents, including Drawings and Specifications, will be on file for inspection purposes at the address of the East Pennsboro Township Authority stated above, and at the office of Gannett Fleming Corddry and Carpenter, Inc., at the address stated above.

EAST PENNSBORO TOWNSHIP AUTHORITY

Gannett Fleming Corddry and Carpenter, Inc., Engineers

Bids: October 31, 1960

Construction of Sanitary Sewers—Gates-Chile-Ogden Sewer District

Sealed bids for the construction of sanitary sewers for the Gates-Chili-Ogden Sewer District, will be received by the Monroe County Sewer Agency, at its office at 406 Terminal Building, 65 Broad Street, Rochester 14, New York, until 11:00 A.M. E. S. T. on the 31st day of October, 1960.

Bidding forms can be obtained and plans and specifications examined at the office of the Monroe County Sewer Agency, or at the office of The Lozier Company, Engineers, 10 Gibbs Street, Rochester, New York.

Copies of plans and specifications may be obtained upon the payment of twenty-five dollars ($25.00) for each section.

The full amount charged will be returned to all bidders who return the complete plans and specifications in an acceptable condition within thirty (30) days from the date of award to the successful contractor. Half of the amount charged will be returned to non-bidders who return the complete plans and specifications in an acceptable condition within thirty (30) days from the date of award to the successful contractor. Checks or money orders should be made payable to the order of Gordon A. Howe, Monroe County Director of Finance.

The work consists of the construction of:

SECTION "E-2"— Approximately 15.2 miles of Sanitary Sewer, 8 inch to 20 inch diameter, with all appurtenances.
SECTION "K-1"— Approximately 15 miles of Sanitary Sewer, 8 inch to 24 inch diameter, with all appurtenances.
SECTION "K-2"— Approximately 10 miles of Sanitary Sewer, 8 inch to 15 inch diameter, with all appurtenances.

Each section may be bid separately.

COUNTY OF MONROE
BY: C. A. Bennett,
Purchasing Agent

October 13, 1960

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THIS WEEK AND EVERY WEEK

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Editorials

Good Time to Build

Armco Steel Corp. was reported last week as ready to begin $95 million worth of industrial building construction. The fact that broadening product lines was mentioned—along with increasing efficiency—as reason for this plant expansion is worth noting. For we should see the greatest pressure for industrial construction in the months ahead coming from new products, rather than from increases in capacity to make existing products.

Also significant in Armco's announced plan to build now is this statement by its president, Logan T. Johnston: "We believe this is a favorable time for us to move ahead with this construction program. We can make our dollars stretch farther now than we could six months ago."

Other manufacturers with new products coming along to the production stage might well heed Mr. Johnston's words, for he, as a supplier of construction materials, knows whereof he speaks.

Nontechnical Limits

The gap between what engineers and construction people are able to design and build and the things that circumstances permit them to produce is probably wider today than at any time in history. Expressions of frustration over this situation are sometimes heard, but they can only be thoughtless. The so-called missile-gap may be something to worry about, but the design-gap should be regarded with pride and recognized as a necessity.

In medieval times, and practically up to a century ago, structures were built right up to the limit of available knowledge, and sometimes beyond. Not infrequently they failed, but when they stood firm, new knowledge was gained. The slowness of this empirical procedure is now a thing of the past, and the frontiers of knowledge are pushed far ahead by scientific reasoning and proven methods of structural analysis. The result is that we now know more than we can use.

This design-gap is, of course, a reflection of a dynamic profession, eager and able to advance, and thus should be a matter of pride. But it is more than that, for it represents a reserve of ability ready to encompass the unusual job when it comes along, and to enhance safety and economy in all jobs.

Whether the design-gap is wider than it should be is more properly a subject for debate. Here, however, influences outside the control of engineers and construction people take over, and must be recognized and accepted. Esthetics, for example, can be one of these influences, as owners and architects decree that just because something can be done is not sufficient justification for doing it.

Economics, however, is the prime deterrent, for it is not lack of design or construction capability that holds back projects for mile-high buildings or mile-long bridge spans. Economics also rules that airplane runways are not going to be built longer than 10,800 ft, says the FAA, while in like vein committees of Congress have indicated a determination to limit the depth of waterways and the load capacities of highways.

It is these nontechnical, noncontrollable factors that put limits on the full utilization of engineering knowledge. This is merely a fact to be recognized, and not one to be regretted. Moreover, a wide gap between ultimate capability and actual utilization of knowledge is good insurance. It makes certain that capability is available immediately and on demand. For a basic industry like construction, that ready ability to produce is an indispensible asset.

Gleams in the Eye

The shape of things to come can often be discerned by what manufacturers think they can sell and are willing to back by research and development money and effort. Some of the current gleams in the eye of manufacturers serving the construction industry suggest the following possibilities:

Bigger tractors are coming—some with 350-hp power plants are being tested.

More of the big pushers used to help load scrapers will be mounted on rubber tires.

Air conditioning, for homes and hospitals at least, will place greater emphasis on clean air.

New systems for concrete form supports will be designed to reduce or eliminate post-type shoring.

Portable central mixing plants will more frequently be substituted for pavers on concrete road work.

The use of pump-turbines will increase in the power generation field.

More tubular booms will be used on power shovels and cranes.

Lightweight diesel engines will power future trucks and tractors; an all-aluminum engine weighing about 7 pounds per horsepower is under development.

Electric motors will be applied to the wheels of more big earthmoving machines to give them greater power and flexibility.

Power tools—drills, saws, hammers and the like—will be increasingly used; one company in this field says that 75% of its sales involve products that are less than seven years old, that it develops as many as 25 new tools every year.

This list could be extended, but the conclusions would be the same: Manufacturers are actively seeking to develop new products and improve old ones that can increase the efficiency and perhaps change the techniques of construction.

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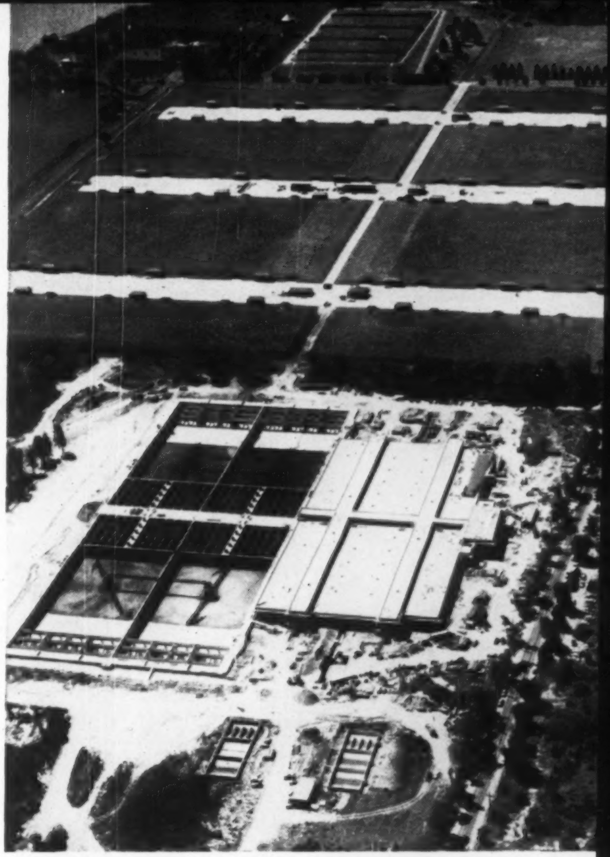

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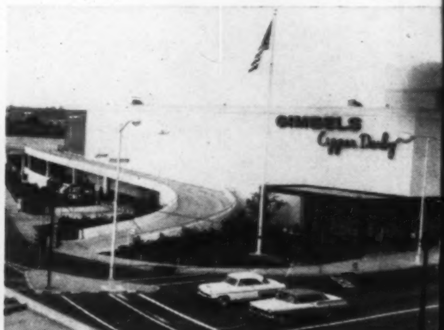

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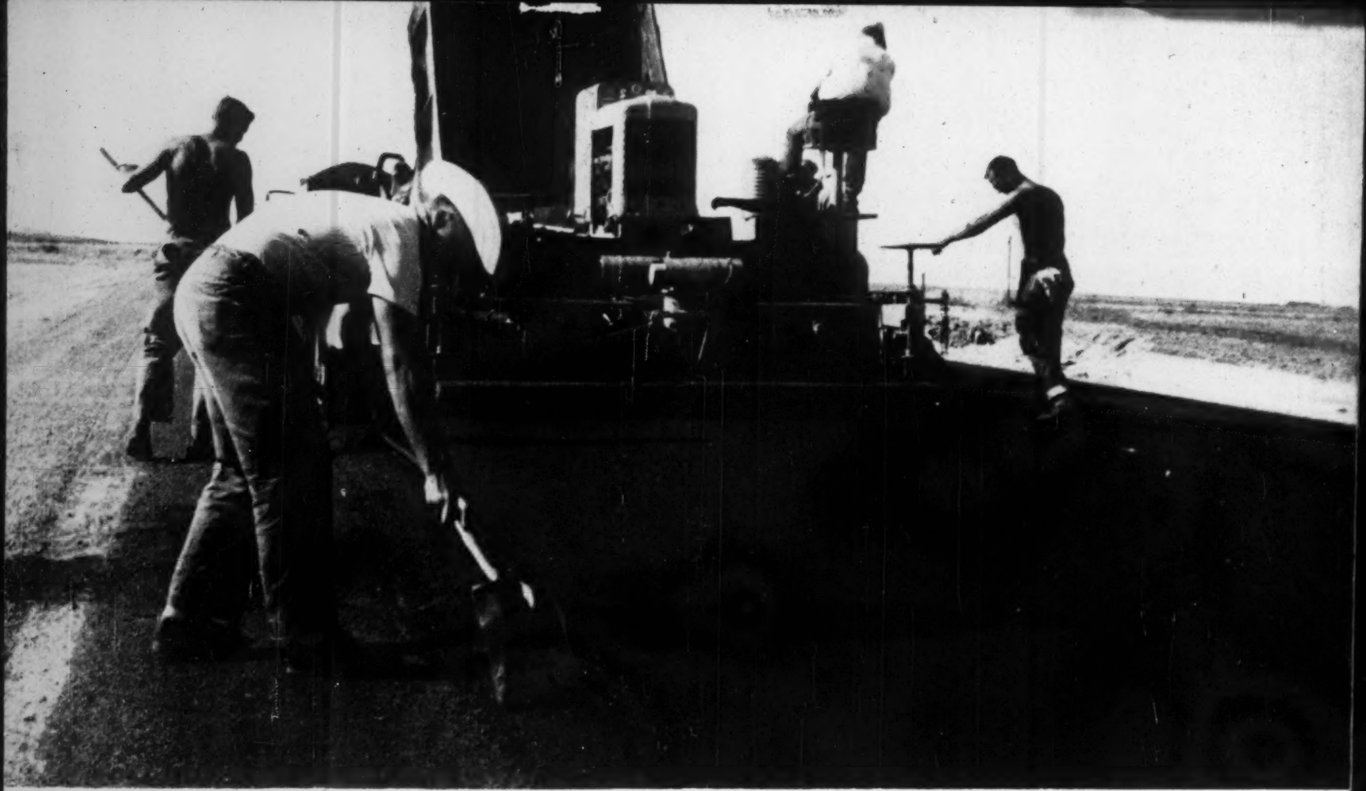

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